NATURE MAGAZINE

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JULY 1929 35¢ VOL. 14, NO. 1

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Organized to Stimulate Public Interest in Every Phase of Nature and the Out-of-Doors, and Devoted to the Practical Conservation of the Great Natural Resources of America

The American Nature Association seeks to find for Nature Study an essential place in every School and in every American Home. It is working for Forest and Wild Life Protection along sane, economic lines. It believes that clean, healthful Out-of-Door Recreation is the key to Good Citizenship

WHEN the American Nature Association's Southwestern Expedition set out for the wilds to get motion pictures of cougar, among other things, it was a good risk that it would succeed. Mr. Pack and Mr. Finley have a habit of sticking to things. Thus, while it was extremely gratifying, it was not surprising to receive the news just before going to press that the pictures had been "got." There is, it appears, however, a thrilling story which goes with this experience, but that will be told in issues of Nature Magazine to come.

* * *

Elsewhere in this issue is to be found a report relative to the Nature Magazine tours to Glacier National Park with special references to the third tour primarily designed for teachers. These trips are not, of course, run for profit and no effort has been spared, both in their planning and the selection of a trained guide equipped from the Nature point of view, to make the tours of distinct educational value as well as an ideal summer vacation experience.

* * *

Our article on the billboard problem in the April issue has aroused no little comment and appreciation. At the same time our mail brings comment from the Committee on Public Relations cooperating with the Outdoor Advertising Industry. Protest is made that our statement relative to advertisers that "more than one hundred and fifty (and the list is available on request) have withdrawn either all of their billboard advertising or that on rural boards," is aside from the fact. We gladly make a correction. Our reference was made to the list of about 250 advertisers, most of them national in character, who have endorsed the campaign of the National Committee for the Restriction of Outdoor Advertising. It is a fact that many of the concerns of this list have not been extensive users of billboards anywhere, whether from advertising policy or respect for the landscape.

* * *

It is only fair to say that the organized outdoor advertising industry is awake to the demand for restriction of billboards on rural routes. It is trying to work out some solution which will, at best, be a compromise. We stick by our attitude of no compromise on this point, but as we brought out in our article ninety-five per cent of the advertising on rural highways is without the control of the organized industry. Such signs can only be eliminated by public sentiment and the invoking of such laws as now exist against the signs tacked up and posted without right.

THE Outdoor Advertising Association has a Committee on Public Relations. Its objectives are declared to be contact with the Public to the end that objectionable billboards may be removed if considered truly objectionable. If, therefore, any reader of Nature Magazine or any group of readers will report on billboards which they feel mar scenic beauty or are otherwise flagrantly undesirable, we will see that this is brought up for action. The exact location of the board; name of the advertiser using it; name of the company owning the board; reason for the objection and any other pertinent details should be clearly stated.

* * *

Before we leave the subject of billboards we must record with regret the failure of the Maine Legislature to act favorably on a bill for restriction filed with it this year. The joint Judiciary and Publicity Committees voted 11 to 8 against the bill, but a very considerable sentiment was aroused and much progress made in the face of activity against the bill by a paid lobby. Eventually Maine will realize that her scenery is more valuable than the revenue a few citizens get from leases for billboard space.

* * *

The reception of our New England issue amply confirms our policy of bringing out geographically designed issues now and then. Both the frontispiece map and articles in the issue were widely noticed and reprinted in the press and the number gained attention outside of New England. The Atlanta *Journal* and the Jackson (Miss.) *News* both found in it text for strong editorials on scenic beauties and their preservation.

We are now actively working on the December issue in which Florida Nature is the topic to engross our readers.

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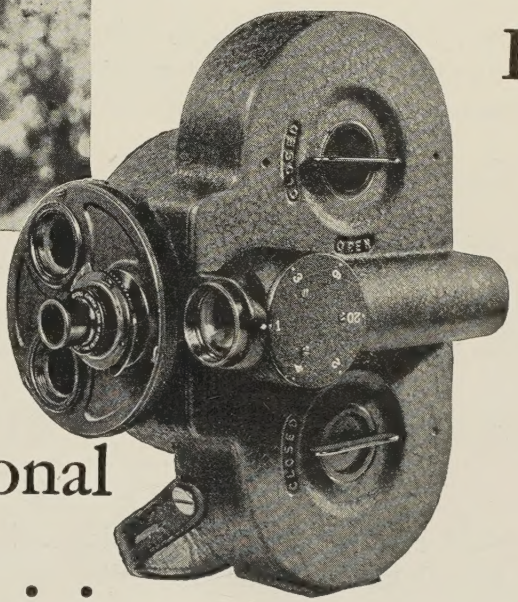
Now the new seven speed FILMO 70-D



Hunt With This Master of All Personal Movie Cameras . . .

Conquers speed! light! distance! with a twist of the wrist

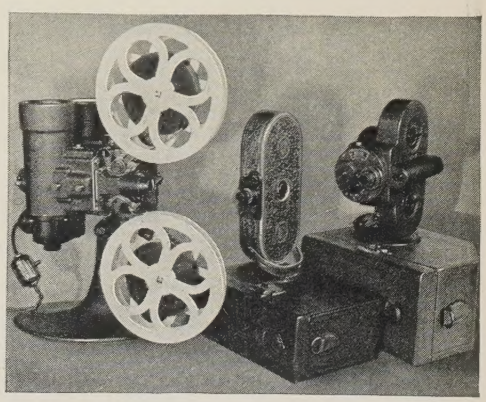
BR'ER FOX sticks out his nose unexpectedly. And you're 100 yards away. What chance have you got? If you move, he's gone!

But you *don't* move, with the new Filmo 70 D! With this amazing camera you can catch a distant view of Br'er Fox surprised at the mouth of his den, turn a telephoto lens into place for a "close-up" without taking your eye off him, and then change film speeds for a s-l-o-w movie of his escape down a rocky path . . . all in a breathless minute or two.

A twist of the wrist gives you any of three lenses, a touch of the finger any of seven speeds, at a turn of a knob you see through the spy-glass viewfinder the field area of the lens you're using. Simply look through it, press the button, and "what you see, you get." In fact you get *more* than you can see with this crowning achievement of Bell & Howell's 22 years experience in the manufacture of professional and amateur moving picture equipment.

Its only rivals are Bell & Howell studio cameras, costing up to $5,000, that film Hollywood's leading productions. Yet Filmo 70 D, including one Taylor-Hobson Cooke 1-inch F 3.5 lens, costs but $245 in its smart, Sesamee locked cowhide case with shoulder strap. Like all Filmo Cameras, Filmo 70 D takes either a 50 or 100 foot roll of film.

Ask the Filmo dealer to demonstrate the new Filmo 70 D, or write for descriptive literature and the illustrated movie booklet, "What You See, You Get."



(Right to Left) Filmo 70 A, the original personal movie camera, surpassed only by Filmo 70 D, $180 and up with carrying case; Filmo 75, pocket-size and aristocratic, $120 with carrying case; Filmo Projector, insuring brilliant, flickerless screening of the movies you take, $190 and up with carrying case.

BELL & HOWELL

Filmo

WHAT YOU SEE, YOU GET

For black and white pictures, Filmo cameras use Eastman Safety Film (16mm.)—in the yellow box—both regular and panchromatic—obtainable at practically all dealers' handling cameras and supplies. Filmo cameras and Filmo Projectors are adaptable, under license, from Eastman Kodak Company, for use of Eastman Kodacolor film for home movies in full color. Cost of film covers developing and return postpaid, within the country where processed, ready to show at home or anywhere with Filmo Projector.

BELL & HOWELL CO., *Dept. G, 1800 Larchmont Ave.*, CHICAGO, ILL. · NEW YORK · HOLLYWOOD · LONDON (B. & H. Co., Ltd.) · *Established 1907*

NATURE MAGAZINE is published by the American Nature Association
Entered as second-class matter May 31, 1927, at the post office at Washington, D. C. Additional entry at Greenwich, Conn.
Publication and Editorial Offices, 1214 16th Street, N. W., Washington, D. C. Additional Offices of Publication, Greenwich, Conn.
Chicago Advertising Office, Mather Tower Bldg. New York Advertising Office, 171 Madison Avenue.
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Are You a TEACHER?

If so, you will find indispensable the new quarterly publication of the American Nature Association publishers of Nature Magazine.

THE NATURE AND SCIENCE EDUCATION REVIEW

25c. A YEAR

This publication has been enthusiastically endorsed by the American Nature Study Society and by leading school superintendents, principals and teachers in all parts of the country.

48 Pages—Size—6 x 9 inches.

Issued January 1st—April 1st—July 1st—October 1st.

Those who are already using Nature Magazine may receive this new publication quarterly by the additional payment of only 25c a year.

The regular price when not taken in club offer with Nature Magazine is $1.00 a year.

Please tear off and mail the coupon below and you will be enrolled as a regular subscriber to the Nature & Science Education Review.

The Nature & Science Education Review is edited primarily for teachers, but Library members and individual subscribing members in the American Nature Association may take advantage of this offer.

NATURE MAGAZINE
1214 Sixteenth Street, N. W., Washington, D. C.

I accept your special club offer of the Nature & Science Education Review in addition to Nature Magazine which I already receive, and enclose herewith $.25 for which you will enroll me as a regular subscriber.

THIS ADDRESS should be the same as that of your subscription to NATURE MAGAZINE

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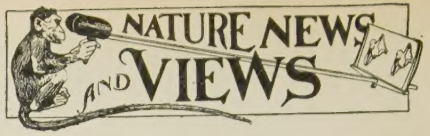


Migratory-Bird Conservation Act

In February, 1929, a bill was passed by Congress that promises to be of far-reaching significance in wild-life conservation. In its final stage it was popularly known as the Norbeck-Andresen Act.

Briefly, this act authorized the establishment of an indefinite number of inviolate refuges for migratory wild fowl, so distributed as to afford the greatest amount of protection to these valuable birds on their wintering and breeding grounds, and on their migratory flights between these areas. For this important object the act authorizes the appropriation of about eight million dollars, through a period of ten years, for purchase and maintenance of refuges. For the first year an appropriation of $80,000 has already been made, to be expended mainly for a preliminary survey of the field.

This great conservation measure is to be administered by the Bureau of Biological Survey, and its importance may be gauged by the fact that that bureau has already established a new unit, effective July 1, to be known as the division of land acquisition.

The Migratory-Bird Conservation Act represents the culmination of several efforts, dating back about eight years, to establish a series of refuges for wild fowl, in order to meet more effectively the obligations of the United States under the Migratory-Bird Treaty with Great Britain, which affords protection to birds that migrate between the United States and Canada. These efforts resulted in various bills which successively failed of passage. By the elimination of certain provisions which did not meet with popular approval, notably Federal hunting licenses and public shooting grounds within the so-called refuges, the opposition to the earlier bills was overcome.

If we read the signs aright, the inviolability of refuges is now firmly established as a principle in game bird conservation. But it should not be forgotten by the friends of conservation that the final success of this great effort will depend on securing the successive annual appropriations. The measure is of such far-reaching importance that it merits the active efforts of every one genuinely interested in the welfare of our interesting and beautiful aquatic wild-fowl.

The Children's Fair

New York City school children will have an opportunity to demonstrate their knowledge of Nature in connection with the Children's Fair of the American Institute, to be held October 11 to 17 at the American Museum of Natural History. The arrangements are under the auspices of the School Nature League. Prizes totalling more than $3,000 will be offered for the best displays of work in several classifications. Full details may be obtained from The American Institute, Fisk Building, Broadway at 57th Street, New York City.

THREE new film releases by Bell and Howell for the home movie outfit are of interest to outdoor lovers since they are scenic pictures of the Grand Canyon country. One is taken along the north rim of the Grand Canyon, the second up the Kaibab trail to the north rim, and the third down the Bright Angel trail into the canyon. They are of special interest to the person who has made a trip to this wonderful country or who plans to, or, even, one who would like to.

* * *

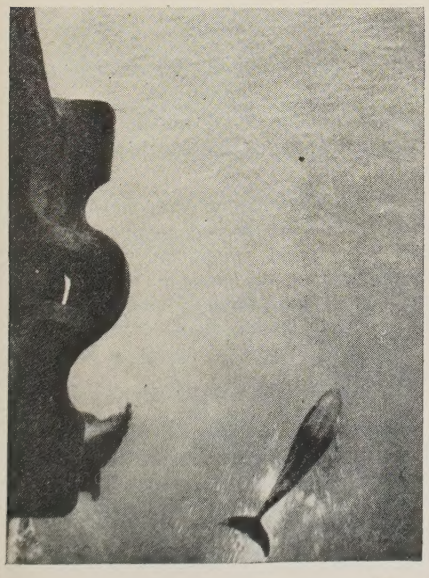
The fourth annual session of the DeVry Summer School of Visual Education will be held this year during the week of July 8 in the new medical building of Northwestern University, Chicago. As before it provides a fine forum for the exchange of ideas and the consideration of the important phases of visual education as supplied through the motion picture.

* * *

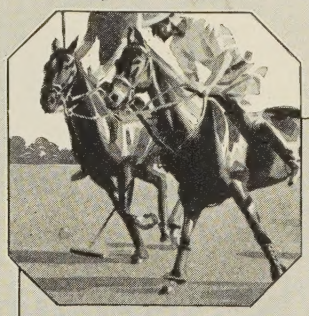
Amateur movie makers will find it worthwhile to investigate the new 16 mm. reversal film placed on the market recently by the Agfa Ansco Company. One feature of this film, which may be only a detail but is, nevertheless, an excellent idea, is that when the reel is received back from the company after processing, it has a leader strip of green transparent film and a trailer strip of red. Thus one can see at a glance whether or not the film has been rewound.

* * *

Amateur photographers will be interested in the picture below, which was taken by Mildred E. Smith of Ashland, N. H., on board the S. S. San Jacinto en route from New York City to Galveston, Texas. Porpoises provided much entertainment for the passengers and Miss Smith resolved to get a tangible proof of their entertaining abilities. She set her No. 1A Autographic Kodak Junior at speed 25 and, contrary to rules, pointed it at quite an angle downward. Guiding herself by the anchor she waited for the porpoise to jump, and here it is.



THE SIMPLIFIED
GRAFLEX



The Camera for Pictures That Are Hard To Get

Ponies full tilt . . . mallets slashing, puck zipping across the turf—polo. Swiftest of sports. Too swift for even the practiced eye of an artist to catch the details—but not too swift for a Graflex.

There's only one camera for such pictures—the Graflex! Incredible speed. Absolute certainty of focus. The camera to which no picture is impossible. It eliminates guesswork.

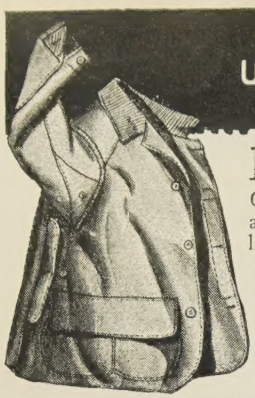
Graflex "Series B", 3¼"x 4¼", speed up to 1/1000 second—$80. . . . . Other models $85 to $375.

FEATURED BY THE BEST DEALER EVERYWHERE

GRAFLEX

PERFECTLY SIMPLE — SIMPLY PERFECT

FOLMER GRAFLEX CORP. ROCHESTER, NEW YORK



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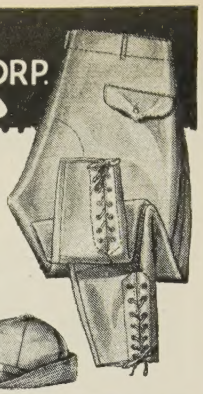
TRADE MARK



EASIER fishing, paddling, rowing, camp work. Most practical Breeches and Hat-Cap. Duxbak Coat's pivot sleeves *free* your arms. Famous genuine Duxbak "Sheds water like a duck's back" cloth, best fit and looks, long faithful service. All at moderate cost. See your dealer, or write us. New book, "Serviceable Clothes," FREE.

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PENN STATE

NATURE CAMPS
In the heart of Pennsylvania's Most Beautiful Mountains

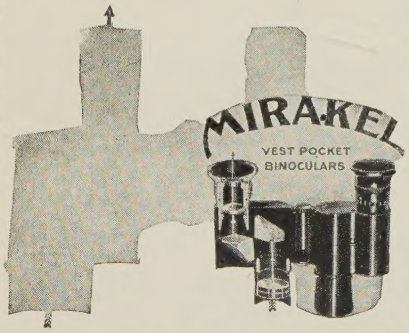
Summer Session

FIRST CAMP: JUNE 27 TO JULY 18

SECOND CAMP: JULY 17 TO AUGUST 7

Write to PROFESSOR GEORGE R. GREEN, State College, Pa., *for special Nature Bulletin*

Which Will You Take:



The Big or the Little One?

The little MIRAKEL achieves everything a heavier and more expensive instrument can---and several surprising things besides, especially

UNIVERSAL FOCUS

that is: Once focussed, focussed for Life and for all Distances---25 feet, 25 yards or 25 miles!

5-Power 5 Ounces **$25** 7-Power 6 Ounces **$35**

USED BY
Frank Chapman *R. Bruce Horsfall*
Arthur Newton Pack
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MIRAKEL DISTRIBUTORS
1214 16th Street Washington, D. C.

250 POWER MICROSCOPE $16.50

MADE IN U.S.A.

Educational, entertaining, this fine microscope helps all to know life that can't be seen with unaided eye. Tiny insects look like monsters. Plant and mineral life reveal new wonders in form and color. Used by students, dentists, physicians, scientists---in home, office, school and laboratory. Precise optical qualities.

Magnifies 100 to 250 times. Tilting stand, fine finish, nickel trim, plush-lined case, prepared slide, instructions. At your dealer or direct postpaid. Money back guarantee. Other models $2.50 to $8.50.

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861 Hudson Ave. Rochester, N. Y.

The Out-Of-Doors Is Calling You!

Get a Carpenter Tent and camping equipment; tune up your car and answer the call—take the whole family along. Send for catalog and get the whole story. It's FREE! Contains a splendid chapter on auto camping.

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TENTS—AWNINGS—FLAGS
Tentmakers for 87 years
440 North Wells Street Chicago, Ill.

OCEAN GROVE, N. J.

Ocean Grove N.J. overlooking ocean
THE SHELBURNE
V.C. Haynes owner & mgr.
HOT & COLD RUNNING WATER IN EVERY ROOM

Used & New Field Glasses

Pocket size prisms in 3½, 4, 5, 6, 7 & 8-power, 3 to 12 oz. weight; $13 to $35. Zeiss, Hensoldt (including "Dialyt"), Mirakel, Busch, Schutz, Lemaire, Atco, Colmont and Megaphos. Galilean or "field glasses" $3 and upward. Satisfaction guaranteed. Sent on approval.

J. ALDEN LORING
Box K O-we-go, N. Y.

ELSEWHERE in this issue a page is devoted to a report on the Nature Magazine Glacier Park Tours, the first of which, leaving Chicago on July 6, has been closed. Bookings are now being made in the order received for the second tour on July 20 and the third on August 10.

* * *

Exceptionally low cost, all-expense tours to Nassau, Bahamas, and Havana are announced for the summer months by the Munson Steamship Lines. These are twelve-day cruises offering a restful vacation on the water. The trips are made on the *S. S. Munargo* and the *S. S. Munamar*. Write to the Travel Editor for the new sailing schedules.

* * *

For those who wish to make a longer southern summer cruise on the all-expense basis, the Ward Line announces a 25-day trip touching at Havana, Vera Cruz, Mexico City, Progreso and Merida. Six days will be spent at the Hotel Geneve, Mexico City, and one day in Vera Cruz.

* * *

Totem poles of the Pacific Coast Indians, the "family crests" of aboriginal tribes, are to be used in the decoration of a novel Indian tea-room which forms part of the Canadian National Railways' new extension to the Château Laurier Hotel in Ottawa. To ensure the faithful reproduction of the original poles, native Indians have been brought 2,500 miles from British Columbia to Ottawa for consultation, particularly in the matter of coloring, because of the difficulty of reproducing with modern paint the sombre hues secured by the Indians with berries, roots and other natural coloring materials.

* * *

Two more water trips for the summer may interest some of our readers who enjoy this sort of vacation. One of these is the week's cruise on four of the Great Lakes run by the Chicago, Duluth and Georgian Bay Transit Company. This affords all the comforts of an ocean trip. The other is the group of Gulf of St. Lawrence cruises offered by the Clarke Steamship Company. These last start from Montreal and can be planned to include Canadian Labrador, Newfoundland and various other points.

* * *

Sweden is growing more and more to be a popular destination of European travelers and those people planning trips abroad should consider the possibilities of including this northern land in their itinerary. The Swedish Traffic Association provides a variety of material to assist in planning such a trip.

* * *

Bus travel is becoming so organized now that it fits admirably into a combination trip or even an all-bus tour. The Royal Blue Line has suggested vacation itineraries covering the entire United States or a single state or groups of states. It is well, in

GAME PRESERVES in DIXIE

IN the coast regions of Georgia and South Carolina the waterways and wild lands provide natural game and fish refuges in a setting of varied attractions and historic tradition. Quail, deer, wild turkey and other game abound in this favorable climate and at readily accessible locations.

The following are examples of properties available, subject to withdrawal or prior sale:

1. A tract of 10,000 acres, 10 percent rice field and backwater reserves, on the railroad and concrete highway about 50 miles from Charleston. Adjoins a preserve owned by the DuPont family. Excellent hunting.

2. About 4,454 acres, bounded on three sides by rivers, located about 35 miles by road from Charleston. Plenty of game; good house.

3. 5,471 acres in Camden County, Georgia. Rolling pineland suitable for propagation of quail, deer, and turkey and forest management.

In many cases forest management may be combined with the primary game features to yield a revenue which will pay all or part of the carrying charges.

We will furnish details or find the property you want.

THE JAMES D. LACEY COMPANY
Barnett Bank Building
Jacksonville, Florida

Subsidiary of James D. Lacey & Co., Chicago, New York, New Orleans, Memphis, Seattle, Montreal and Vancouver

planning one's vacation, to consider the various modes of travel and as many of the possibilities as possible.

* * *

Many people prefer for their vacation to leave the details in the hands of some organization specializing in planning all-expense tours. Raymond and Whitcomb Company are noted in this field and have worked out an amazing variety of land cruises for the United States and suggestions for summer travel in this country and Canada. All responsibility for routes and reservations is thus taken from the individual.

* * *

A new observation-lounge car has been adopted by the New York Central for its Twentieth Century Limited. The platform of the observation car is larger and more recessed, affording more room for fresh-air devotees, while the railing, six inches higher than the average, is an additional safety precaution. The observation room is furnished in Spanish style, upholstered in velour, with chairs and settees for fourteen persons. The decorations have as their motif ancient mythology. Adjoining the observation room is a single bedroom. Next to the bedroom is a standard drawing room. Next to the drawing room is the lounge, with a seating capacity of sixteen, which is furnished with reading tables, table lamps, and side and ceiling lights. Adjacent to the lounge is a buffet, which is equipped for serving the usual soda fountain menu.

Animal Anecdotes

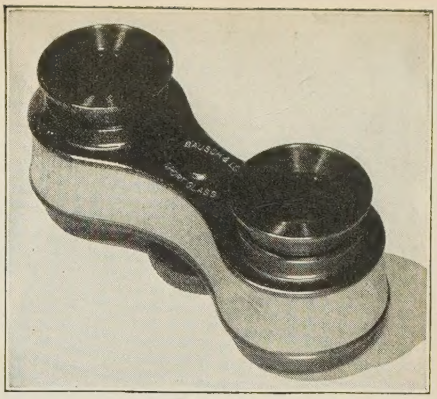
Something for the fireside, the after-dinner speaker, and the animal lover is *Animal Anecdotes,* by I. N. Heminger, who is a newspaperman with a love for the creatures of which he writes. He has collected several hundred stories about dogs, cats, birds, bears, wolves, elephants, snakes and other members of the kingdom—little tales that show their bravery, their wisdom, their adventures, their thoughts. Humor, pathos, wit, and deep tragedy are moulded into the compilation—there is a story for every occasion, short, vividly written and to the point. The publishers are Dorrance and Company, Inc., 368 Drexel Building, Philadelphia, and the price is $1.75.

Kansas and her Trees

Trees in Kansas has been brought out by the Kansas State Board of Agriculture and is a helpful volume for tree students in that State and contiguous ones with similar flora. Forestry, the various trees and their uses and a key to their identification with outline drawings are provided. We are not clear on what basis it is available but the Board of Agriculture at Topeka can answer that.

99 44/100 Per Cent

Soap Bubbles is the title of a new book by Ellen Beers McGowan designed for textbook or supplementary reading use in elementary industrial science. It is the story of soap, its uses, chemistry, manufacture and varieties. It is presented in story form. It is published by Macmillan, the price not being revealed to us.



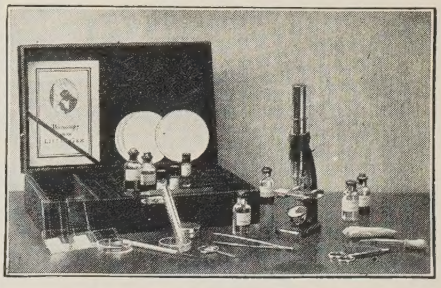
The Sport Glass

KEENER VISION FOR THIS YEAR'S VACATION

Wherever summer trails may lead you—to the fields of sport, to the mountains or the seashore—you'll find new enjoyment in the outdoors if you take these two simple aids to vision.

The Bausch and Lomb Sport Glass is a pocket model that brings distant objects right up to your eyes. Easy to carry and use. Wonderfully steady. And it has a wide, brilliant field and surprising magnification.

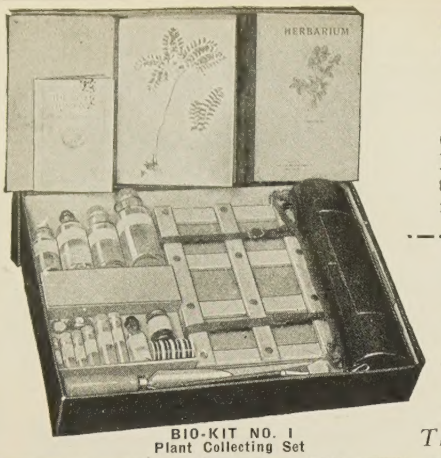
To those who find their relaxation in the quiet study of nature, the Little Gem Microscope unlocks new worlds for exploration. It gives you magic eyesight to investigate the wonders that exist in seemingly ordinary things. So simple in construction that a child can use it—yet it will show an object 5625 areas larger than you see it with the naked eye.



The Little Gem Science Kit

The Sport Glass comes in a variety of handsome finishes at $16.50 to $25.00. Gem Science Kit, complete, costs $27.50. Little Gem Microscope, only $17.00. Both obtainable at good shops everywhere.

Bausch & Lomb Optical Co.
728 St. Paul Street, Rochester, N. Y.



BIO-KIT NO. I
Plant Collecting Set

The Bio-Kits

Indispensable for Camp!

Complete outfits, including "The Bio-Kit Handbook", giving directions for collecting, preserving, and mounting specimens.

N. Y. Biological Supply Co.
34 Union Square, N. Y. City.

Gentlemen:— Enclosed $..... for item (s) checked below, money to be refunded if not satisfactory.
☐ BIO-KIT NO. I — $8.50; ☐ NO. II — $8.50

Name .....

Street or R. F. D. .....

City .....State .....

The Source for Nature Study Supplies!

BIO-KIT NO. II
Insect and Animal Collecting Set

All who have seen the Finley pictures in the past will agree that these pictures are the best yet.

An ideal feature for the winter program of Hunting and Fishing Clubs, City Clubs, Nature Clubs; and absolutely unique as a private entertainment.

WONDERFUL LECTURE *on* WILD LIFE

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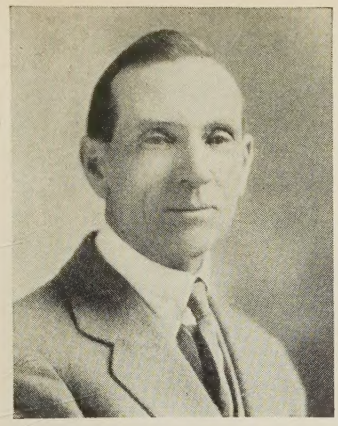

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Birmingham Bats 1000

Rarely in the District of Columbia, when the dogwood enriches woods and park with its spring glory, does one now see motorist or pedestrian bearing branches stripped from the lovely trees. The reason is publicity and public education, inspired by the Wild Flower Preservation Society and made effective through the cooperation of the newspapers, the traction companies and other civic agencies.

Now Birmingham, Alabama, has achieved the same thing and this spring conducted a militant and successful campaign in defense of the wild flowers. Enlisted in the cause were the *News, Age-Herald* and *Post* of Birmingham and all local flower lovers. The match was touched off by Mr. George B. Ward in a strong statement made in an interview. The newspapers carried stories in their news columns, editorials and features by special writers. A writer to the editor sniffed at the campaign and brought into the newspaper a horde of letters bristling with condemnation of one not minded to cooperate. Circuit Judge J. Russell McElroy made a stirring charge to the Grand Jury, calling attention to the State law of 1927 establishing penalties for vandalism in ruthlessly gathering wild flowers.

Result: Birmingham was aroused. One was in bad odor who was seen with a fistful or armful of the delicate wild flowers. More blooms than ever before were allowed to spread their beauty for the enjoyment of all, to seed and prepare for renewed beauty next year. May other cities follow this example!

Corn as an Emblem

Thirty-five years ago a little woman living in Eastern Nebraska began a single-handed campaign to have Congress adopt as the national emblem a typically American plant —native corn. She wrote a poem about it, and had it set to music, and through the years had waited for the nation to awake to her plea. Now that the national flower campaign is on, she again raises her voice to ask consideration for her candidate. And corn, so closely woven into the life of the country, cannot be rejected without consideration both for the flower and for Mrs. Clara Rice, its sturdy advocate, who has fought for it through all these years.

Nature Field School

From July 23 to August 20 a Field School of Natural History is to be conducted by Professor H. W. Clark of Pacific Union College, Angwin, California. A course has been designed which will be of college grade and give regular college credit, or it may be taken purely as non-credit study. Full information can be obtained from Professor Clark by addressing him at Angwin, California.

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At Superior, Arizona, there has been established the Boyce Thompson Southwest Arboretum, dedicated to the growing and study of desert flora. The arboretum is situated at the base of famous Pickett Post Mountain and is under the direction of F. J. Crider. It already embraces about three thousand specimens of plants, many of them native to the southwest.

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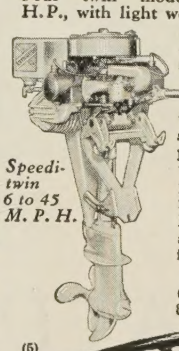

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PUBLISHED BY

THE AMERICAN NATURE ASSOCIATION

To Stimulate Public Interest in Every Phase of Nature and the Out-of-Doors, and Devoted to the Practical Conservation of the Great Natural Resources of America

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Nature Magazine, past and present, is indexed in the Reader's Guide in your library.

NATURE MAGAZINE is published monthly by the American Nature Association
Entered as second-class matter May 31, 1927, at the post office at Washington, D.C. Additional entry at Greenwich, Conn.

Subscribing Membership Blank will be found in the back pages of the magazine.

Publication and Editorial Office, 1214 16th Street, N. W., Washington, D. C. Additional Offices of Publication, Greenwich, Conn.

ADVERTISING OFFICES

New York—171 Madison Ave.
Chicago—Mather Tower Bldg.
Washington, D. C.—1214 16th St.
San Francisco—Hunter-Dulin Bldg.
Los Angeles—Lincoln Bldg.
Seattle—Henry Bldg.
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NATURE CALENDAR

JULY

by E. Laurence Palmer

NATURE begins to check up on some of her mistakes in July. The young birds that leave the nest too soon find it impossible to escape enemies which later in their lives might be easily avoided. The seedlings of trees that flourished during the late spring find, when July comes, that many have not had the good fortune to have established themselves so that they may avoid drought, excessive sunshine or other conditions which destroy many plants. To be sure, many of the birds and many of the seedlings may weather, for a time, experiences which if repeated would be fatal. Young woodchucks prowl about seeing the world with much more recklessness than their elders. While some survive, many do not. Possibly they learn by experience and the mistakes they make at this stage in their lives help them meet more serious crises later on.

July opens with every probability that there are more individual birds and mammals being supported in our out-doors than is the case at the close of the month. This generalization may not be and probably is not true when applied to the invertebrates. They continue to multiply in number until much later in the season. There is little probability that invertebrate animals learn through experience as do the more intelligent birds and mammals. We find isolated cases where amphibians such as the frogs and salamanders are reported to have learned that they may expect kindness or must avoid danger from humans. We even find it reported that some of these creatures will come to humans when called. Certain it is that reptiles such as the snakes and lizards seem to respond kindly or otherwise to treatment to which they may be exposed. Persons attempting to win any sign of intelligence from these creatures must ordinarily exercise extreme patience. It is possible, of course, that what might be mistaken for intelligence on the part of these creatures is nothing of the sort. Nature lovers living in camps during July will find plenty of interesting experiences attempting to tame or make pets of the wild birds and mammals which they meet.

While we like very much to believe such stories as the poem written by A. A. Milne about "Alexander Beetle" we must admit that, in all probability, we let our sentiment run away with our good sense if we really believe them. We read of tamed butterflies and pay good money at the county fairs to see trained fleas but we know that the fleas are not trained and we feel reasonably sure that the actions of the butterflies are greatly misinterpreted.

We like to think of trees and other plants as friends. We even think of brooks and rocks as being friendly but we know that none of these can compare with the friendship of a dog. Few dogs will see their masters injured by an enemy without going to their defense. There are few if any of our friends other than men and dogs who will voluntarily put themselves in danger for our protection.

It may be interesting during July to try to analyze to some extent the degree of real friendship existing between ourselves and our pets. Undoubtedly we will allow our feelings to influence our judgment to a great extent. It is interesting to note that July is the birthday month of Alfred Binet who did much to establish means of measuring mental age and intelligence. Among other things he pointed out that all clear thinking must involve "a direction, an adaptation and a criticism". Feeble-minded individuals, according to Binet, lack ability to hold the directing idea; they fail to make any selective choice in their adaptation, and most important of all, they lack completely a critical sense of judgment. They cannot analyze.

Man's greatest advantage over his animal friends is his ability to adapt himself, to utilize past experiences, and create new patterns of action to meet each problem. It may take a dog days to learn to associate the ringing of a bell with meal time, while any child will understand it within a day. Man has shortened the period of "trial and error"—thus he can rule his world.

THE TRUMPETER SWAN, WHOSE SHATTERED FLOCKS MUST GROW

America's finest wildfowl faces extinction unless there is a united effort made to preserve it and increase its numbers

NATURE MAGAZINE

LIBRARY

Volume 14

Number 1

July, 1929

The TRUMPETER'S LAST CALL

The Epic of a Season in the Life of the Swan

by Margaret E. Thompson Sheldon

Illustrated by R. Bruce Horsfall

DISMAL RIVER is one of the loveliest spring-fed, clear-running streams that God ever let flow over white sand. Nestled along its hundred-mile course are beautiful copses of plum, wild cherry, ash and willow in grassy glens that rest the traveler's eye and invite him to summer camping ground. How did so beautiful a stream win so tragic a name? The river flows through the heart of the sand-hill region in northwestern Nebraska. One crosses fifty miles of dunes and blowouts before reaching the highest sand-hills through whose central area winds the beautiful narrow valley of the Dismal.

The head of the stream is a group of lakes set in grassy meadows and surrounded by the silence of drifting sand ridges. These meadows grow each year thousands of tons of the finest hay. On the hills and valleys which surround them is abundant range for vast herds of cattle. The invitation to the settler given by these lakes and meadows, these hills and valleys, went unheeded for countless thousands of years.

THIS ISSUE *of Nature Magazine is, in a sense, dedicated to one of the noblest of the vanishing species of wild life in our country,—the trumpeter swan. Mrs. Sheldon, Nebraskan bird lover and humanist, has contributed this fine introductory article. As a companion story we are presenting another article by Alexander Sprunt, Jr., Curator of Ornithology at the Charleston, S. C., Museum, in his series of stories of nearly extinct birds.*

The Pawnee and the Kiowa, the Sioux and the Cheyenne preferred the broad plains and the open valleys of the Platte and the Republican, as also did the great herds of buffalo. Rarely a band of warriors visited the Dismal or its lakes and meadows. Only the wildfowl knew its attractions and nested every summer in the peace and security of the lovely region.

When the Sioux wars ended with the surrender of Chief Crazy Horse and his ragged band of warriors at Fort Robinson in the spring of 1877 the service of many famous military scouts who had guided the campaigns of the United States army through many years of constant warfare with the hostile Plains Indians ended. Among these scouts were Colonel Wm. F. Cody, Major Frank North and Captain Lute H. North. Major North had discovered the Dismal Lake country while acting as guide for Professor Marsh's Yale Geological Expedition in 1870, and quickly recognized its matchless opportunity for raising cattle on free range. This vision he shared with

his comrade scouts, Captain North and Colonel Cody. Soon after the surrender of the Sioux in 1877 the Cody and North ranch was established with its ranch buildings and corrals upon the edge of one of the most beautiful lakes, called Dismal Lake, in the finest meadow-valley of the region.

The ranch house was built of hewed cedar logs painfully secured from the deep cedar canyons many miles distant. It was a frontier fort, pierced with rifle port-holes on every side and well stocked with guns and ammunition, for, while the Indian wars were ended, there was always possibility of raids by runaway bands. There was no other ranch within fifty miles and the range was an ideal one in respect to water, grazing ground, meadow and that perfect quiet so desirable for the production of fat and sleek cattle.

In the spring of 1878 the North brothers were in charge of the ranch and lived with their men in the ranch house at the edge of Dismal Lake. A row-boat and a pair of oars on the shore furnished easy access to every part of the lake's waters. One morning of those delightful days when the sand-hills and meadow-valleys are clothed in the wonderful colors of springing grass and the plains flowers, Captain Lute North became aware that the lake was inhabited by newcomers, a pair of stately trumpeter swans, whose snowy plumage and graceful motions made it a picture in Nature's most perfect mood. Exploring day by day in his boat Captain North was delighted to find that the swans were making their summer home in a little bay secluded and remote. Cautiously, to avoid alarming them, he ventured every morning a little nearer to their rendezvous, taking with him some of the ranch bread—a wonderful combination of flour, lard, and soda familiar to the cowboy dinner table—and set it afloat in the direction of the swans, literally casting his bread upon the waters. Soon the swans learned to associate the figure of the man and the boat with the bread of promise and good will and would sail in stately splendor like white-rigged ships across the waters toward him on his daily morning venture into their bay. He was then able to discover their nest, a platform of grass and rushes upon the roof of a muskrat house in a forest of flags and reeds where the waters shallowed and plant-life ventured out into the lake. In such places that patient pioneer, the muskrat, builds his aquatic home typical of his own life, half beneath, half above the waves.

On the roof of such a house the swans had found, ready made, the foundation for their summer home, thus in the solitude of the sandhills setting up that modern city institution, the one-floor-to-a-family apartment house. Here in the serene happiness of housekeeping sat the lady trumpeter upon her eggs, while her lord sailed the waters far and near watchful for food and possible foe, his sonorous voice proclaiming powerfully from time to time that all was well. After locating the nest, Captain North each day rowed his boat a little nearer, throwing his biscuit toward the mistress of the lake dwelling. Soon, gliding off her nest in perfect trust, she would come up to the side of the boat for the expected food. The male trumpeter never came quite so near, but shared the food at what he regarded a safe distance.

As the summer days drew near, two of the four whitish eggs in the sky apartment of the muskrat house became cygnets, sailing the waters of Dismal Lake by the side of their proud parents, like shallops by the sides of full-rigged ships. The baby swans, guided by their mother, quickly learned that Captain North was the family benefactor and the group of three welcomed his coming every day by buoyantly gliding out to his boat, eating the food from his hands, while half a cable's length away, the father watched for his share of the banquet. So the Nature lover in the heart of this captain of Pawnee scouts day by day drew deeper draughts of joy from the water of Dismal Lake and drove farther away the grim memories of scalp-hunting days on the trail of the Sioux.

THE BEAUTIES OF DISMAL LAKE

Faith in Captain North led them to reveal to him their nest and eggs, hidden in a sheltered bay

It was time for the June round-up. The North brothers left the ranch in charge of employees while they went forth for a month's absence over the sandhills upon the adventures and hardships of the ranchman's harvest. All the men on the ranch knew the story of the tame swans, and after Captain North's departure it became the entertainment of those remaining to row out daily upon the lake to feed them. One of the ranch hands conceived a brilliant idea. It was to capture the baby swans, amputate the first joint of the left wing of each, thereby making it impossible, as he thought, for them ever to leave the valley, and thus start a domestic swan industry. There was little difficulty in driving the young swans into the rushes on the shore of the lake, capturing them, and cutting off their wing tips. When Captain North returned from his month's absence on the roundup and was told of the deed he promptly discharged the man who did it, giving in a few brief words his opinion of the act and of its abettors. Memories of hand-to-hand fighting at Summit Springs, and of that tense morning on Chadron Creek when the Seventh Cavalry and the Pawnee Scouts surrounded Red Cloud's camp in the early dawn and, in the face of the fierce scowls of the Sioux warriors, stripped them

of every horse in the camp, leaving the proud chief and his band to march on foot to Fort Robinson—these and other memories of the frontier wars, never calloused the tender heart of the Nature lover in Captain North.

Midsummer time was upon the sand-hills. The hot August sun burned the grass of the hillsides brown. The early spring blossoms were gone, but the white plains poppy and the ivory-blossomed shafts of the Spanish bayonet, called by the cowboys soaproot, and used in emergency for washing, were still blooming about Dismal Lake. The four swans still sailed the summer waters. The younger pair grew rapidly in stature, in attractiveness and in their confidence in Captain North. Every day he fed them and every day they drew nearer to his hand and grew dearer to his heart. Their plumage was slowly changing from the duskiness of the trumpeter cygnet to the snowy white of the mature bird. In the summer school conducted by the older birds they made rapid progress in every art of the swan, except that of flying. The anxiety of their teachers in respect to this became pathetic. The parents would rise from the lake and take short flights as example. The young would eagerly imitate, rise a few feet, flounder in the air and fall back upon the water.

September came. The swiftly moving sickle knives of the mowing machine cut short the meadow-grass of the valley while the ranch men piled great stacks of hay for the coming winter. Flocks of red-winged and yellow-headed blackbirds were holding autumn conventions, filling the air with their clamor, before the fall migration. Young ducklings of the early summer were flying from shore to shore trying out their wings for the long southern journey. The swan parents doubled and trebled their efforts to teach their young to fly. The result was always the same; the wings rose and beat the air, the short wing failed to balance the bird, which fell back into the water and swam in the direction of the flying parent. Daily this tragedy in wild life was enacted in sight of Captain North who was helpless to aid.

October brought frost. The uncut grass in the meadow turned reddish brown to complement the color of the gray-brown grass on the higher hills. The blackbirds had trailed away southward. Migrants from farther north were passing by, giving brief greeting of the colder days from which they had fled. The wise old swans knew that it was time to go and urged their children with all the affection and example the wild birds' heart and brain can feel or know to master navigation of the air. But even as the first fabled men who tried to fly failed, so failed these children of the swan.

The first thin ice sheet fell upon the lake one day in November. Only a few spots of open water, where springs boiled up from beneath, remained. On one of these were the four swans. Captain North drove his boat through the thin ice to the water island and fed the family, intending after the old birds had migrated to take the young birds to the ranch for safe-keeping during the winter. The parent birds' anxiety and grief were perfectly apparent. They were still trying, again and again, to get the young birds on the wing. The day grew intensely cold, and later both the old birds disappeared from the lake. Still later in the day both the young birds had gone. Dismal Lake that night froze thick ice, save for one or two small spots kept open by warm spring waters from below.

Where had the young swans gone? This question deeply troubled Captain North. A circuit of the lake on horseback showed no sign, for the snow had not yet fallen. Two or three days later, riding over the high hills he found the answer to his question. A scattering of young swan's feathers—a few bones—wolf tracks in the sand—told the story. This spot was six miles from Dismal Lake, due south. True to the strong migratory instinct these young birds, robbed of their wings and left alone, had set out for the Gulf Coast—afoot! Despite their slow and awkward means of locomotion they had persevered and, surviving the perils of one night, had trudged along bravely through the next day,—when the end.

In December a swan returned to Dismal Lake,—the mother swan. She alighted in the space kept open by a powerful spring below. She flew, several times, the circuit of the lake and then the circuit of the valley. She called, as she flew, the old, irresistible mother-call, which every bird keeps to guide its young, but heard no longed-for voice in response. Finally, with a last call, she rose on her powerful, snowy wings far above the scene of tragedy and winged her way due south over the bleak winter sandhills that surround the valley of Dismal Lake.

And the memory of this tragedy still lingers over Dismal Lake—a tragedy caused by ignorance and faithfulness to eternal urge.

THE URGE THAT WOULD NOT DOWN

On foot, trudging through the bitter cold along the dunes, the two flightless birds followed the call of the Southland, until death. . . .

They Shall Not Pass

The Trumpeter Swan Faces Its Verdun

by Alexander Sprunt, Jr.

Illustrated by R. Bruce Horsfall

AMERICA, from the earliest times, has been noted for its abundance of wildfowl. Swarming multitudes of ducks, geese and swans frequented this country and drew comments from many pioneer historians, explorers and settlers, and abundant proof of these impressions remains with us today.

Always held in high esteem as food, the waterfowl have been classed as game birds for centuries. In all countries, for ages, ducks and geese have been recognized as palatable and nutritious table birds, and this opinion still holds although the number of the birds does not.

Because of mankind's greed, the demand of the gourmand, the desire for the dollar, waterfowl have been steadily decreasing through the passing years. Had it not been for strict legislation, it seems safe to say there would have been few left to us today. Waterfowl we still have, and under present conditions, will continue to have, but there are certain individual species which need careful protection. The numbers of these are so few, that our laws seem almost too late to save them.

Let us say boldly that the days of America's largest waterfowl seem to be numbered. The magnificent trumpeter swan, in the opinion of many able investigators, is upon the verge of extinction. That the grandest of our wildfowl has been brought so near to oblivion is a blot on the records of man's dealing with the lesser animals. But the fact remains that we are faced with the task of helping it regain something of its former estate. While there is life there is hope. We know some are left, and it is up to this generation to see that they remain; more than that, see that they increase bountifully.

This is another story in the group being written by the Curator of Ornithology at the Charleston, (S. C.) Museum. They deal with birds that are facing extinction and are presented in the hope that they will play their part in arousing the public opinion so necessary to support the law and conservationists in the task of preserving and increasing the numbers of these birds. Let all lend their support that the trumpeter swan shall not pass!

In many respects, the histories of the trumpeter swan and the whooping crane parallel each other. Both large birds, both of white plumage, both of far-reaching voice, it is also true that both are among the rarest of our native birds. While the swan may never have been as numerous as the crane, the situation is the same now, because there are hardly any more of the one than of the other.

While the rarity of the trumpeter swan is directly due to the destructiveness of man, it has never been a game bird, in a true sense. The adult bird is totally unfit for food, being very tough, and unpalatable, and though the young are naturally tender, the fame of the swan on the table is not high. This fact, however, has not prevented them from being slain at every opportunity. Evidently, the sight of so grand a bird was always too much of a temptation to be overcome by the majority of gunners. Any large bird seems to be unfortunate in providing a good target, and so the shot is taken, and, in many cases, the dead bird is left as carrion. Certainly, the trumpeter swan is a large bird. It has frequently been known to attain a weight of thirty pounds, and at least one of thirty-six pounds has been recorded.

Unreasonable shooting, then, is one of the causes of the scarcity today. Another reason is the crowding out of breeding grounds. It once bred in northern United States, and may still do so in the wilder parts of Montana and Wyoming, but, again like the whooping crane, civilization has forced it back into the wilderness of Canada toward the Arctic sea. Once common on the Gulf Coast in winter, only a scattered few have been noted there in recent years, a sad remnant.

Even in some parts of its northern range and remote breeding grounds, the ravages of man follow. The Eskimo hunters kill it at every chance, wreaking great slaughter at the time of the summer moult, when the birds are unable to fly. In the past, Dame Fashion, who has so often sealed the doom of other feathered victims, decreed that swansdown must be had, and the situation grew worse. Thousands were killed for the feathers. When a ready market and the dollar are in sight, all sentiment, all love of beauty, all spirit of conservation flee from the minds of many. As in the case of the egrets, terns, and grebes, beautiful feathers have proved a doubtful asset to the swan, but we may be thankful that this nefarious trade has been ended by law.

The former range of the trumpeter embraced nearly the whole of North America. In winter, it was found as far south as lower California, but the southern states were the principal wintering quarters of the stately bird.

It is a far northern breeder, going to the very shores of the Arctic Ocean. The bird has few natural enemies, its size and strength combining to make it a dangerous antagonist, the blows which can be delivered with the wings possessing surprising power.

The nest is usually quite bulky, composed of rubbish, grass, leaves and the like. It is built on the dry tundra, and lined with feathers and down to receive the five to seven, chalky-white eggs. The similarity of the immature birds of the trumpeter and whistling swan is so marked that difficulty is encountered in identifying them, but the adult birds may be differentiated by the fact that the whistling swan has a yellow spot in front of the eye. It seems strange that the latter species is comparatively common, and becoming more so, while the trumpeter continues so rare.

In the breeding season the remaining members of the race seem largely confined to the interior of Canada. Migrating, the swans travel, like geese, in wedge-shaped formation. One bird breaks the aerial trail until tired, and drops back into line while another takes the front. Often, during the migratory flights, the swans fly at such stupendous heights that they are not discernible to the naked eye, but the clear, trumpet-like notes of the white voyagers drift downward to the earth even when they are out of sight in the sky.

In the opinion of many, saving this bird is a losing fight. Too few are left, they say, and the public not aroused. And yet, there are those who are thoroughly alive to the cause, and are doing able work in the preservation of the few which remain.

Herein lies the salvation of the future. Preserve enough of the birds, maintain strict protection, and their numbers must increase. Reports which occasionally come in give rise to hope. A few years ago, a nest of this species was found in Yellowstone Park, and for some years past, a flock has been known to winter in British Columbia, under the protection of the Canadian Government, keenly alive to the bird's need.

In these two localities, where the rigid protection of wild life is assured by the backing of two great governments, the trumpeter swan has a chance. Of course, much of the country to the northward, where most of the birds breed, is yet inaccessible to man generally, and fairly safe from molestation, as the Eskimos do not range far inland.

It is during the migrations, and on the winter grounds, that the birds must be watched and protected from gunners, and allowed to return in peace to their northern home in the spring. That Canada is alive and working is a great help to the swan. We, in this country, must send them back, inviolate, to safety in the north.

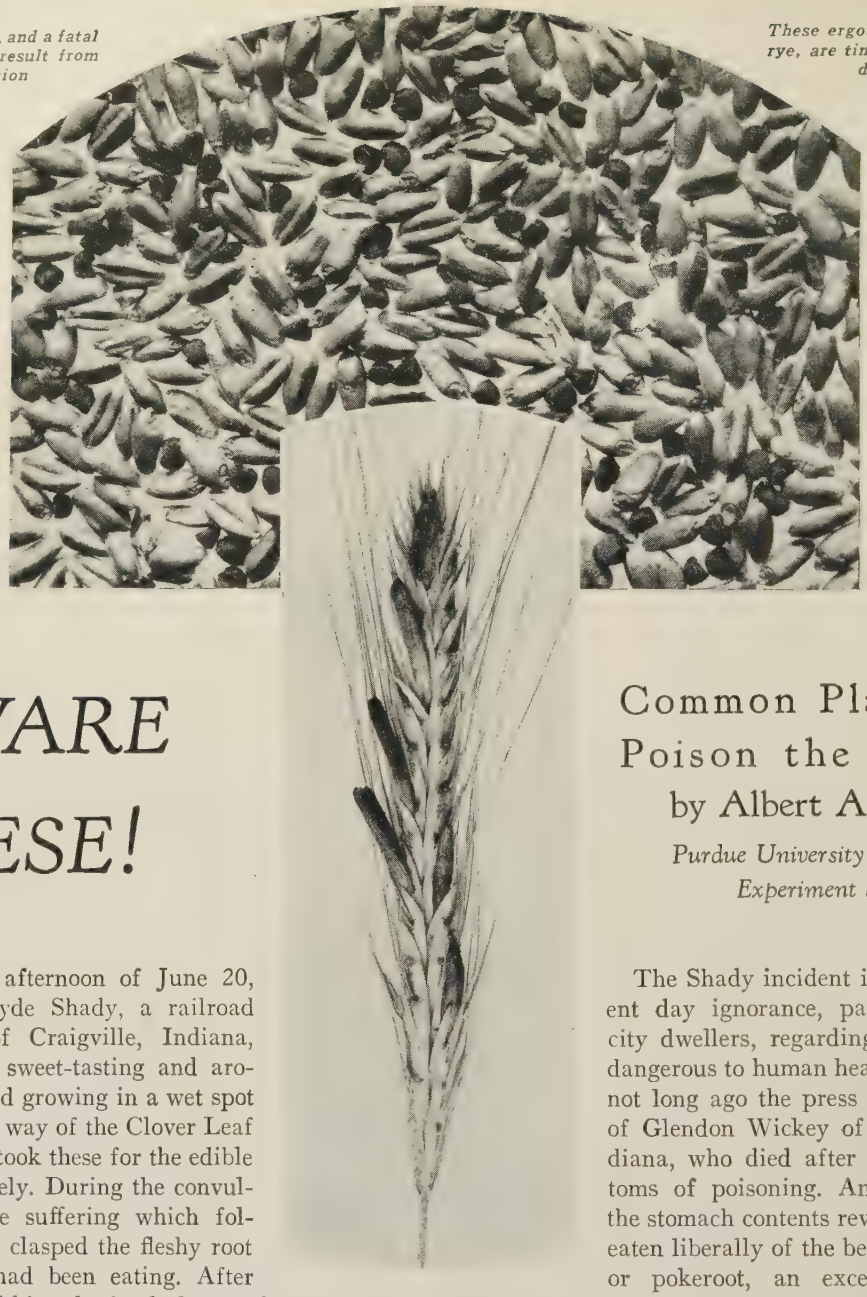
Mayhap, in the past we have broken trust with auk, pigeon and parakeet, and they have gone, beyond recall, but now, can we not say, in regard to America's finest most beautiful wildfowl, *They Shall Not Pass?*

WHEAT WHEN IT'S MAN'S POISON

Cockle seeds infest it, and a fatal human disease may result from the adulteration

THE DANGER OF LITTLE THINGS

These ergots, seen below on the rye, are tiny, but they contain a deadly drug



BEWARE THESE!

Common Plants that Poison the Careless

by Albert A. Hansen

Purdue University Agricultural Experiment Station

During the afternoon of June 20, 1923, Clyde Shady, a railroad worker of Craigville, Indiana, partook of some sweet-tasting and aromatic tubers found growing in a wet spot along the right of way of the Clover Leaf Railroad. He mistook these for the edible roots of sweet cicely. During the convulsions and intense suffering which followed Shady still clasped the fleshy root from which he had been eating. After death had relieved him, the fatal plant with a few leaves still clinging to it was identified by C. C. Deam, State Forester of Indiana and a well known botanist, as water hemlock, one of the most dangerous plants in America. When the fleshy tubers of this species are cut with a knife, a glistening yellow exudate soon forms and it is in this colorful juice that the poisonous principle, called cicutoxin, is located. It is dangerous alike to man and beast; a piece the size of a walnut was said to have been used for suicidal purposes by the North American Indian. In addition the young shoots are also dangerous to livestock.

Water hemlock is not uncommon along wet roadsides, swamps, stream banks and similar moist situations from coast to coast. A number of human deaths from water hemlock poisoning have been recorded by the writer during the past few years in Indiana and the chances are that similar trouble has been experienced in other parts of the United States, but have gone unrecorded.

The Shady incident is typical of present day ignorance, particularly among city dwellers, regarding plants that are dangerous to human health. For instance, not long ago the press reported the case of Glendon Wickey of Mishawaka, Indiana, who died after exhibiting symptoms of poisoning. An examination of the stomach contents revealed that he had eaten liberally of the berries of pokeweed or pokeroot, an exceedingly common species, both the roots and berries of which contain a dangerous poison. During the war this species, which, although native in the United States is common in France, was known as crazyberry among the American soldiers on account of the effect of the fruits on a number of doughboys who had ignorantly partaken of them. Although the young shoots are edible when boiled as greens, care must always be exercised to see that no part of the root is included and the shoots should only be eaten after thorough boiling. Fatal poisoning of children has been recorded as a result of mistaking the fleshy roots for artichoke, parsnip and similar plants.

During the past few years the writer has investigated a number of human cases of milk sickness, a disease now held responsible for the deaths of thousands of pioneers in the Ohio River Valley states and southward and recently demonstrated to be caused by drinking milk from cows that have grazed heavily on a plant known as white snakeroot. The species responsible for

THE HARMLESS WILD PARSNIP
No ill effects are felt from eating this

A POISONOUS WATER HEMLOCK
Its roots are not friendly to man's system

the trouble is common in woodland pastures, being particularly conspicuous during early September when the clusters of pure white blossoms appear in profusion. A typical case of human snakeroot poisoning occurred during June, 1927, on a farm near Farmersburg, Indiana, where the owner, his wife and twelve-year-old boy became severely ill. The attending physician diagnosed the trouble as milk sickness and stated that frequent vomiting, severe constipation and abdominal pains, symptoms very characteristic of milk sickness, were pronounced. An examination of the woods in which the animals that had furnished the family milk supply had grazed revealed a heavy growth of the dangerous plant and abundant evidence was seen that the white snakeroot had been heavily grazed upon. Furthermore, it developed that stock had been lost in the woodlot after exhibiting symptoms typical of white snakeroot poisoning. Although the illness of the mother was so far advanced that nothing could be done to save her life, the father and son showed improvement as soon as the poisoned milk was removed from the diet and both are sound and hearty today.

Strangest of all human poisoning plants is the curious little ergot, a fungus that infects the ovaries of the blossoms of rye, wheat, bluegrass and other members of the grass family, resulting in the formation of small, hard, dark, boomerang-shaped bodies that apparently replace the seeds. From these bodies, called ergots, is obtained ergotine, a powerful drug capable of causing abortion in animals that have grazed on ergotized herbage. Bread made from grain containing ergots may cause a fatal human malady known as ergotism, a disease that swept in epidemics over ancient Europe when it was known as St. Anthony's fire. As a matter of fact epidemics of ergotism both in man and beast have appeared almost periodically since the days when the Caesars ruled Rome and many have been the earnest prayers from entire populations of France, Germany, Sweden, Switzerland and other European countries to deliver the people from this terrible plague. Outbreaks of ergotism have appeared in the United States in 1820, 1857 and 1892 but it is felt that there is now little danger of its return on account of the vastly improved methods of modern milling. Nevertheless, a recent issue of the British Medical Journal reports an outbreak of ergotism in the Jewish population of Manchester, England, due to eating bread made from flour which on analysis was found to have been made from grain containing one per cent ergotized rye. Incidentally, it is interesting to note that reliable authorities have observed a recent increase in the amount of ergot found in the grain growing districts of our own Northwest. There is little cause for alarm, however, since American millers are for the most part familiar with the situation and they know how to eliminate ergots when they appear.

DO NOT MISTAKE FOR ONIONS
Narcissus bulbs grow pretty flowers, but they so resent being eaten as to cause serious illness

Another ancient disease that has practically been eliminated by the modern miller is githagism, caused by eating bread made from grain badly infested with the seeds of corn cockle, an exceedingly abundant weed wherever wheat is grown in the United States and Europe. The seeds contain a toxic principle called githagin, capable of causing acute or chronic poisoning that may prove fatal.

The most famous of human poisoning plants is poison hemlock, a species quite distinct from water hemlock. A decoction of poison hemlock was used by the ancient Greeks as a means of putting prisoners to death, poison hemlock tea being held responsible for the death of Socrates. This powerful plant sometimes grows abundantly in waste places throughout the area from Ontario, Canada, to Nova Scotia and southward to Delaware and Indiana, but on account of its peculiar mouse-like, musty odor it is rarely touched. Although no trouble from poison hemlock has been noted in Indiana, where the species is common,—it has even been found thriving in alleys and backyards in the city of Crawfordsville,—and where the writer has conducted field investigations on the poison plant problem for several years, a government authority reports a number of accidental cases of hemlock poison-

ing due to eating the seeds in mistake for anise, the leaves for parsley and the roots for parsnips and even from blowing whistles made from the hollow stems. Since several members of the parsnip family are dangerously poisonous, it is a good rule to follow to never eat any part of a parsnip-like wild plant.

Another common wild species that is protected by a disagreeable odor is our old friend Jimson weed, the seeds of which not infrequently poison children rash enough to partake of them. At Pleasant Lake, Indiana, two children were almost fatally poisoned by the simple act of sucking the long, trumpet-like Jimson blossoms and only heroic efforts on the part of the attending physician saved the little victims' lives.

THE CAUSE OF MANY DEATHS

The flowering top of white snakeroot has brought on milk sickness and was the reason for many pioneer deaths

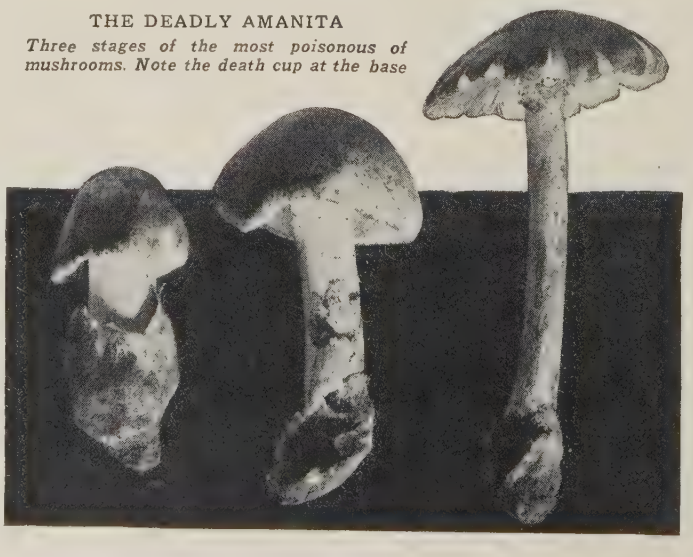
The fruits of black nightshade or bittersweet, frequently eaten, may become fatally poisonous under conditions not well understood and the use of these berries for the making of tarts and pies should be discouraged. The bright orange berries of the well known climbing bittersweet, popular for winter house decorations, are also toxic and as they are attractive to children, a number of reports of poisoning of this character have been recorded. Black nightshade and bittersweet belong to the potato family, all wild members of which should be looked upon with considerable suspicion. Indeed, the writer investigated one case in which common white potatoes that had turned green on account of exposure to direct sunlight caused severe illness among seven people, two of whom died. It has been demonstrated that the greening of white potatoes is accompanied by the formation of a potent poison called *solanin,* and all green potatoes should be rejected for food.

In some instances the poison plant problem may come pretty close to home. For example, the curious beetle-like seeds or beans of the castor oil plant, sometimes used ornamentally, are distinctly poisonous. The writer once had a student who devoured two of these strange beans during a laboratory session and the young man became so severely ill as a result that for a while the victim was certain he was going to die. Even the little blue berries on the privet hedge may cause illness, particularly when eaten by children.

Flower lovers may be surprised to learn that the bulbs of the common narcissus and daffodil are dangerously poisonous. Human beings have died as a result of mixing these bulbs with food in mistake for onions. Not long ago five persons became severely ill due to the accidental use of narcissus bulbs in preparing a stew. So admire the blooms and stop there.

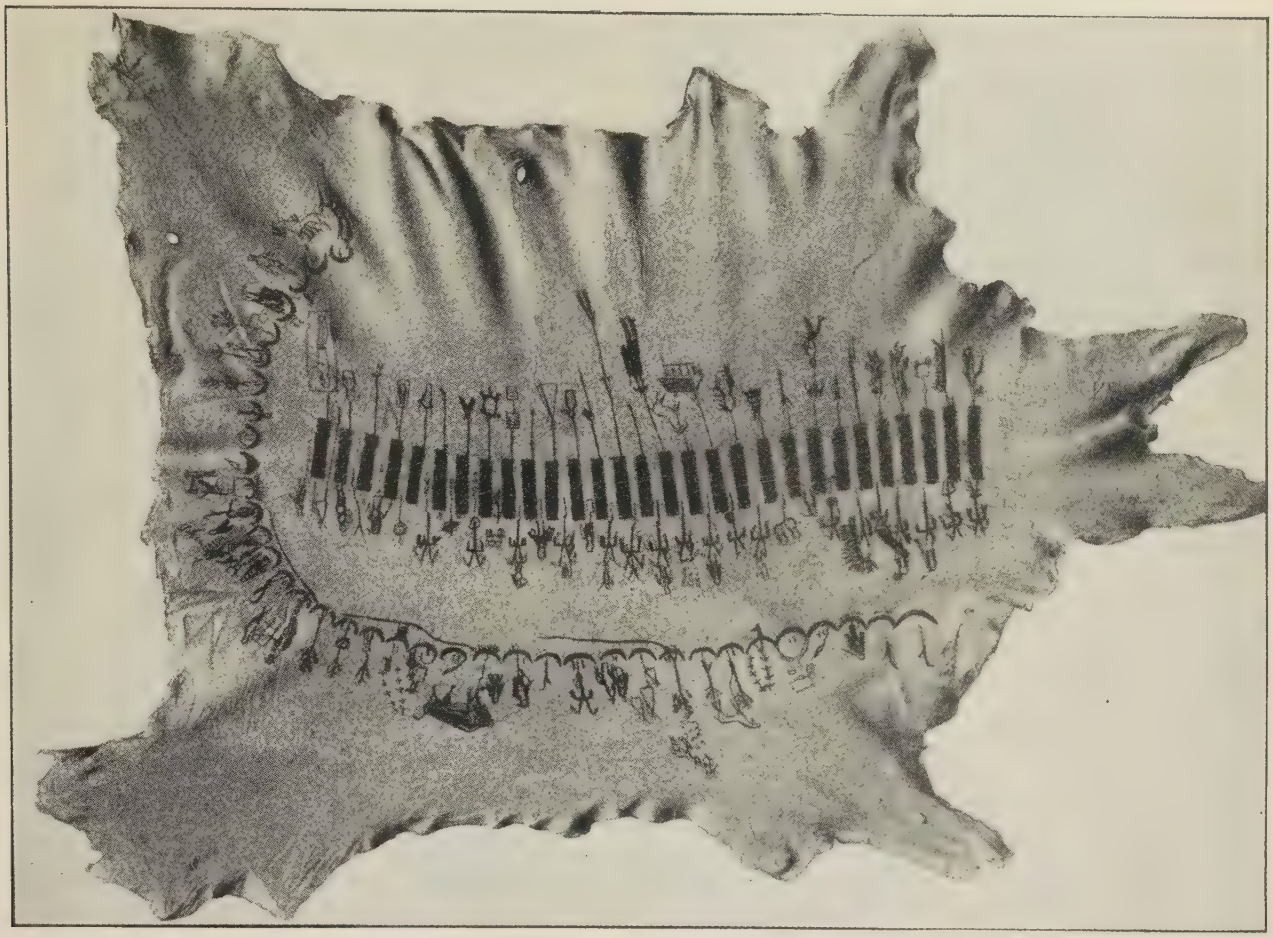
Trees, as a rule, are not apt to contain poisons dangerous to the human, an exception being the common black locust, in the bark of which a strong toxin has been discovered. One of the most disastrous instances of locust poisoning on record occurred several years ago when thirty-two boys from a Brooklyn orphan asylum chewed locust twigs during a hike through the country. All were badly poisoned and it required hard work on the part of a corps of physicians to avoid fatalities.

No account of human poisoning plants would be at all complete without some mention of the two well known poisonous mushrooms, the deadly amanita and its less dangerous relative, fly agaric. Although deaths from these two species are becoming rarer, that they do occur was recently brought sharply to the attention of the writer when he learned while addressing an organization of physicians that two of his own townspeople had died from mushroom poisoning just a few years ago. Poisonous mushrooms can usually be distinguished by the presence of a "death cup" at the base of the stem, but this is not a reliable guide and no one is justified in taking a chance on eating these fungi unless certain that they are edible species. If poisoning occurs, call a physician at once, and while awaiting his arrival, try to induce vomiting by mechanical means.



THE DEADLY AMANITA

Three stages of the most poisonous of mushrooms. Note the death cup at the base



COURTESY BUREAU OF AMERICAN ETHNOLOGY

CHRONOLOGICAL RECORDS OF THE KIOWA INDIANS

The series of crescents records the lunar months from August, 1889 to July, 1892; the oblong marks, the years from 1864 to 1892

Backgrounds of the Calendar

How Men Learned to Keep Track of Fleeting Days

by Charles Fitzhugh Talman

There is before Congress and the American people the question of revision of our calendar to provide a year of thirteen months of twenty-eight days each. It is a proposition which has the support of many business organizations from the economic viewpoint and has many strong arguments in its favor. This article by Mr. Talman is the first of two on the calendar, this one giving background and history while a second, by Dr. E. Laurence Palmer, will discuss the proposed change from the point-of-view of Nature and the naturalist

FOR DAYS and weeks together I may never behold that inconstant luminary, the moon, but I always know what she is doing. The calendar on my wall happens to be of the kind that indicates the lunar phases, month by month, by little symbols with dates and hours attached. With the aid of the same document I am able to follow the sun in his journey along the highway of the zodiac. We are now near to midsummer, and he is swinging southward in the northern hemisphere. My calendar shows me how many days will elapse before he crosses the equator and how many more must pass before he reaches the southern limit of his course. When the shortest day of the year has arrived, I shall know it, not by measuring the duration of daylight with a timepiece but by consulting the calendar. Lastly, my calendar, by telling me how far the year has advanced at the present moment, enables me to judge pretty accurately what stage has been reached in the summer programme of vegetation and which of my old friends among the wild flowers I shall find waiting for me when I pay a visit to the woods next Sunday.

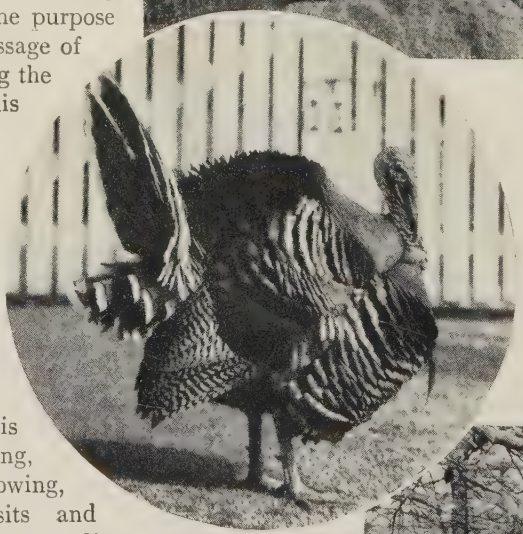
In thus using the calendar as a means of keeping track of recurrent natural phenomena in the heavens above and on the earth beneath I am reversing the process by which

W. L. FINLEY

THE MARCH OF THE SEASONS

Each recurring spring sees mother birds feeding young, while summer finds camps filled with youths such as these pictured below. Calendars were built by observation of such yearly phenomena

calendars originated. Primitive man, at a certain stage in his mental development, discovered that various natural events repeated themselves at more or less regular intervals. Gradually he conceived the idea of utilizing these events for the purpose of gauging the passage of time and regulating the succession of his own activities—his hunting and fishing, his tilling and sowing, his journeys, visits and religious festivals. The earliest calendars were not written documents that showed, for example, when the moon would be full, but they were traditional bodies of knowledge to the effect that when the full of the moon or some other periodic natural occurrence was actually observed, the time had come for man to embark upon such and such undertakings.



THE TURKEY IS A SYMBOL OF THE FALL

While the blanket of snow is a character of the winter

ROBERTS

The calendar now employed by all civilized nations is regulated entirely by the sun, except for the fact that Easter and the various ecclesiastical and civil events connected therewith are fixed by reference to both sun and moon. The world has used, however, hundreds of other calendars—and many of them still prevail in uncivilized or backward communities—in which the sun plays a less prominent part. In some cases other heavenly bodies assume a leading rôle, while in others the calendar is governed largely by natural events on the earth's surface, such as climatic and biological phenomena. Thus calendar-making is a many-sided subject, and not, as is widely assumed, merely a particular province of astronomy.

All calendars recognize one unit of time that depends upon the observation of the sun; viz., the day. The regular alternation of daylight and darkness impresses itself upon the most primitive minds, but among different races of humanity the phenomenon has been conceived and described in a variety of ways. The conception of the day as a period of twenty-four hours belongs to an advanced stage of mentality, and it is still so much of a novelty in the civilized world that most European languages, including English, contain no separate word for this period as distinguished from the interval of daylight.

Several primitive races, including some tribes of American Indians, describe days as "suns", and the classical Greek and Roman poets commonly did likewise, though in Homer we find them reckoned as "dawns". In all ages, however, it has been a more common custom to count days as "nights". This custom prevailed in ancient India, and it survives today in English-speaking countries in the use of the familiar word, "fortnight" (fourteen nights), and the archaism, "sennight" (seven nights). Tacitus records the existence of the same practice among the early Germanic peoples,

and Caesar encountered it among the Celts. Modern Arabians mention dates by referring, for example, to "the first night of Ramadan". Most of the Polynesian races reckon time in nights rather than days. Many Indian tribes reckon in "nights", "darks" or "sleeps".

In his great work, *Primitive Time-Reckoning*, Professor M. P. Nilsson tells us that "at least half the globe reckons the days in nights," and he offers the following explanation: "Primitive man knows only concrete indications of time, and in reckoning prefers to use a concrete and clearly visible point of reference. The day itself, with its various occupations, offers no such point of reference unless the reckoning is based upon the daily appearance of the sun, which is also actually done in certain cases. Now the sleeping time is necessarily bound up with each day, yet it has no separate parts, or acquires them only later among certain peoples. The time between going to sleep in the evening and waking in the morning appears as an undivided unit, a point. It offers for reckoning a convenient basis in which no mistake or hesitation is possible."

The conception of seasons is also acquired at an early stage in the evolution of a calendar, but it is not necessarily related to the apparent movements of the sun. "Season" is a word of various meanings, even from our own present-day standpoint. We apply it to a definite quarter of the year—spring, summer, autumn or winter—but we also speak of such other periods as the "strawberry season", when strawberries are in market; the "football season" at American schools and colleges, and the "London season" of fashionable English life.

It is in the recognition of seasons, long and short, that we find the greatest variety of relations between divisions of the calendar and natural phenomena. A season is in many cases thought of primarily as the appropriate time for certain outdoor occupations, but these, in turn, are usually dependent upon natural conditions and there are certain natural events that serve as signs of the season's approach or arrival; so that the seasons recognized in a particular locality may be distinguished and named according to occupations or natural phenomena or both.

Some seasons are defined by climatic conditions. Thus outside of the tropics the year is divided into the warm season and

A CLOG ALMANAC

Each notch represents a day, and large notches Sundays. Important events are marked by various symbols

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A MAYAN ALMANAC IN STONE

Dating from 410 A. D. Below is the procession of humanity in Lorado Taft's "Fountain of Time", in Chicago

the cold season; in many tropical and subtropical regions there are rainy seasons and dry seasons; and in certain parts of the world there are seasons characterized by prevailing winds. Certain biological phenomena are usually recognized as preceding or attending these meteorological periods. The natives of Uganda know that the rainy season is at hand when the euphorbia trees begin to put out new shoots. The Indians of the Orinoco, according to F. S. Gilij, look for the rains when the monkeys scream at midnight or at the approach of day, when the yams, which have lost their leaves, suddenly grow green again, and when the Pleiades first appear in the eastern sky before dawn.

The migrations of certain birds were cardinal points in fixing the seasons for rural occupations among the ancient Greeks. In his drama, *The Birds,* Aristophanes makes his feathered actors boast:

"We give you the warning of seasons returning,
When the Cranes are arranged, and muster afloat
In the middle air, with a creaking note,
Steering away to the Libyan sands,
Then careful farmers sow their lands;
The crazy vessel is hauled ashore,
The sail, the ropes, the rudder and oar
Are all unshipped, and housed in store.
The shepherd is warned by the Kite reappearing
To muster his flock and be ready for shearing.
You quit your old cloak at the Swallow's behest,
In assurance of summer, and purchase a vest."

In a rural district of Sweden, according to Nilsson, the arrival of the swallow is still regarded as a sign that sowing-time has come, while the Indians of Pennsylvania, a century ago, were guided by the voice of the whippoorwill calling in the spring "hacki heck"—"go and plant maize."

The idea of joining together the successive seasons into a complete year is only gradually acquired, especially within the tropics, where the year is a less conspicuous climatic unit than it is in higher latitudes. There are several primitive races who have no conception of years, but who recognize periods approximately half a year long, corresponding to the wet and dry seasons, or to the monsoon winds, which reverse their direction semi-annually. Even when annual periods are recognized they are at first identified with particular events of the year rather than with the year as a whole.

"As a basis for counting," says Nilsson, "either a longer or a shorter season may serve, or indeed any popular natural phenomenon of regular annual occurrence. Thus of the Chinhwan of Formosa it is stated that they have no calendar; they only know that a new year has come when a certain flower blooms again. The Paez of Colombia have a word *enzte,* 'fishing, summer, year,' since a great fishing is only engaged in once a year, in January or February. In the language of the Tupi of southern Brazil the year is always called *akayú,* cashew-tree, which blossoms once a year and produces a much-prized fruit often used in making wine."

In latitudes where there is a definite cold and snowy season, it is a common practice to reckon years by winters, sometimes described as "snows". This is the custom among the Eskimos and most of the northern tribes of American Indians, and, as in the case of counting days by nights, it is supposed to result from the impression of unity that the uneventful winter period produces on primitive minds, as contrasted with the impression of diversity produced by summer, with its numerous occupations. Some races, however, count time by summers, and a few by autumns or by springs.

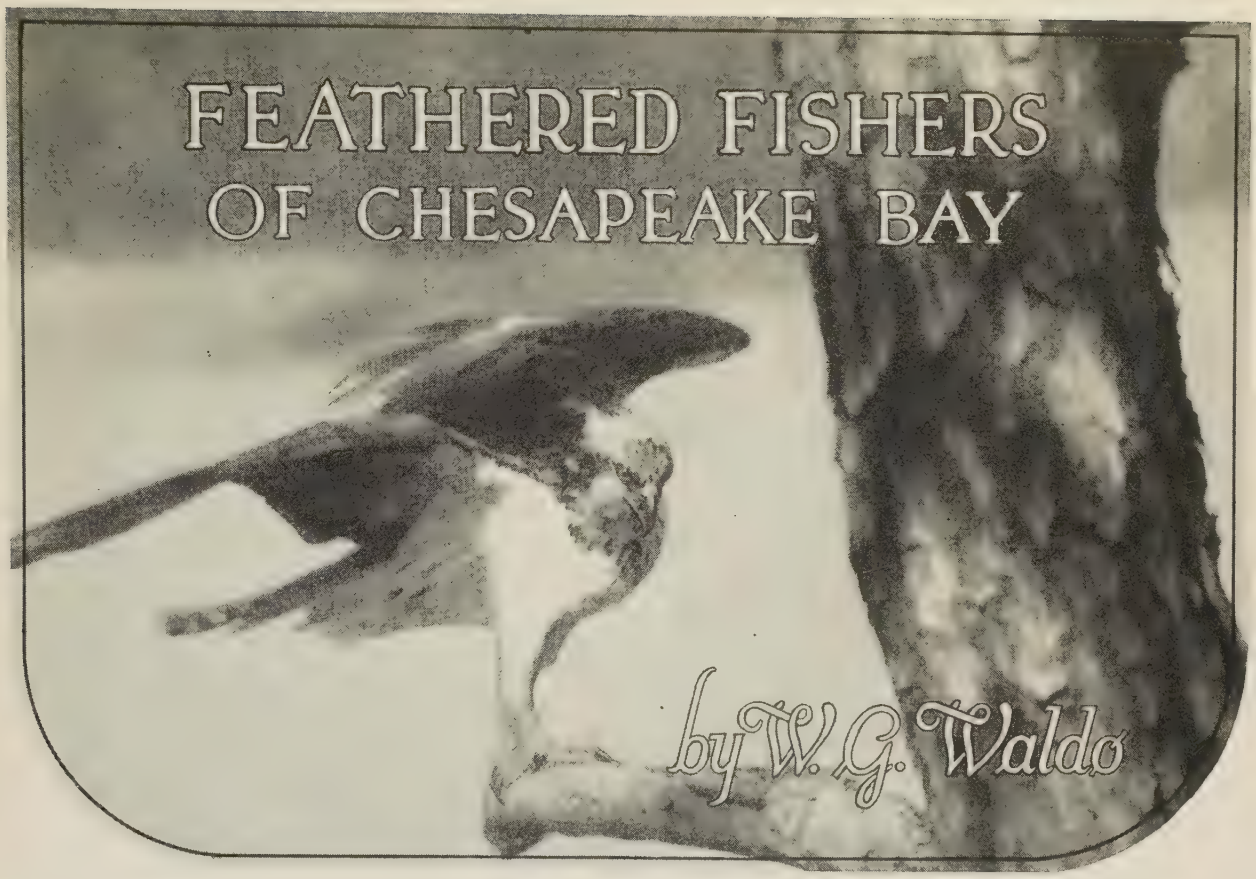
The quite primitive idea of reckoning past time by outstanding events is common among the North American Indians, and in some cases lists of the events have been preserved by means of notched "calendar sticks" or series of pictographs drawn on skins. The meteoric shower of November, 1833, was a notable tally date in Indian time-reckoning. Dating by events is not, of course, peculiar to savages; we ourselves are in the habit of reckoning from such historic landmarks as the Revolution and the Civil War, and the custom is perhaps not yet extinct among Irish-Americans of saying that certain things happened before or after "the Big Wind in Ireland"—(Jan. 6-7, 1839).

The practice of reckoning time by the moon, the basis of our modern months, is almost universal, but it has assumed a variety of forms. Some races do not count the whole lunation as a "moon", but only the part during which the moon is visible, so that one month does not join to the next, but there is a break of a couple of days between. There is much diversity in the way the lunar month is divided; some races recognize only two parts—waxing and waning—others three or four, and in a few cases each day of the lunation has a separate name. In the early development of a calendar the months may run on continuously without any reference to years. Later, attempts are made to fit the months into each year, and this may result in years of different lengths, some containing twelve months and some thirteen; or, as in our own calendar, the lunar month may give way to months of arbitrary lengths.

Another interesting development of the months is the identification of each with particular natural phenomena or human occupations, so that the months assume the character of short seasons. Many lists of the "moons" recognized by different Indian tribes have been published. The following specimen is recorded from the Pimas, of southern Arizona, by Frank Russell: 1, Saguaro harvest. 2, Rainy. 3, Short planting. 4, Dry grass. 5, Winter begins. 6, Yellow. 7, Leaves falling. 8, Cottonwood flowers. 9, Cottonwood leaves. 10, Mesquite leaves. 11, Mesquite flowers. 12, Black seeds on saguaro. Month names based on similar ideas have been used in all parts of the world, including Europe, where many now prevail among the peasants, side by side with the names belonging to the Gregorian calendar.

"Weeks" of various lengths have been used by many races and, as a rule, they appear to have no relation to natural phenomena, though some authorities think that the seven-day week was suggested by the phases of the moon. A very common variety of week consists of the interval between periodical market-days. The eight-day week of the Romans was of this character; every eighth day being a market-day (*nundinae*). The ancient Mexicans had a five-day market week, and similar fixed periods of four or five days are now recognized in parts of Africa, the East Indies and elsewhere.

FEATHERED FISHERS OF CHESAPEAKE BAY



by W. G. Waldo

It was a quiet moonlit night in May. Scarcely a breeze ruffled the waters of the picturesque little cove. Only the drip of the paddles and the distant call of a whip-poor-will was to be heard as the canoe rounded the wooded point and headed for Chesapeake Bay.

Suddenly the stillness was broken by a rapid succession of warning whistles in a descending key coming from the topmost branches of the tallest of a group of large pine trees which marked the water's edge near the end of the point. We were discovered!

There, clearly seen in the bright moonlight, perched a solitary sentinel—a bird almost as large as an eagle—while near at hand, high up in another pine tree, the outlines of a huge nest were dimly visible.

As our canoe approached the sentinel took flight with whistles and cries of alarm. Immediately there followed a ponderous fluttering of wings and a second large bird with similar protests of fear and annoyance flew out from the nest. After circling above the canoe, both birds alighted upon a convenient perch at the top of a neighboring dead tree to await the disappearance of the intruders on their domain.

Such was my introduction to the home of the fish hawk, known to bird students as the American osprey, a summer resident which breeds along our coasts and the margins of inland waters throughout most of our states. I found the fish hawk to be a most interesting bird. He is easily recognized by his size for he is the largest of the hawks with a wing spread of four feet or more. He is also conspicuously marked by his white breast, brown back and the characteristic curvature of his wings as he soars in wide circles or banks steeply against the wind.

GOING ALOFT TO GET ACQUAINTED

The author climbing to the limb where the watching and photographing post was placed

The fish hawk is well worth watching for he is an expert fisher and seldom fails to make a catch. As he circles high above the water, his attention is caught for an instant. Quickly he checks his flight and with rapidly flapping wings remains poised for a moment over a particular spot as if deliberately estimating the distance to the water. Then like a flash and with the certainty of a rifle bullet he dives, skilfully arresting his descent within a few feet from the water if

IN THE NEST OF MR. AND MRS. OSPREY

The baby hawks are about the size of young chickens, woolly and with scrawny necks. Their regular stripes,—light and dark,—are plainly seen. The parent bird is at the left. In the inset we have a display of belligerence

(Below)
THE NEST OF THE OSPREY AND ITS EARLY CONTENTS

This picture was obtained early to show the appearance of the three beautifully spotted eggs from which hatch the young ospreys

the fish has gone or striking beneath the surface with a loud rush as he seizes his victim in his powerful claws.

Strong as he is, he sometimes meets his match when he strikes too large a fish, for he drives in his talons with such vigor that, unable to release his grasp, he may be dragged under water and drowned. Instances have been reported in which the attacked fish had received its death blow and fish and bird together were washed up on the beach.

The osprey's attack seldom results disastrously for the fisher, however, and he soon arises, shaking the water from his feathers and carrying his prize head-foremost in his claws. He has a decided preference for carrying the fish in this manner and sometimes turns the fish end for end while in flight if he happens to catch it tail foremost. Slowly he wings his way to shore where the fish is eaten at a convenient spot or is carried to the nest and shredded for feeding the babies.

In the more sparsely settled regions of the Chesapeake Bay country the bald eagle is still to be found, sometimes in the vicinity of a colony of fish hawks, for he finds nothing easier than to bully the

FORTUNE FAVORED THE PHOTOGRAPHER THIS TIME

The position of the bird could not be seen from the ground but the camera recorded this picture. The inset shows the coloration that makes the chicks hard to see against the background of their lofty home

(Below)
THE YOUNG OSPREYS WHEN THREE WEEKS OLD

At that time they were covered as though for protection with brown feathers in color like the oak leaves that were brought to the nest

osprey out of his well-earned dinner. Residents of a locality frequented by fish hawks often tell of seeing an eagle relentlessly pursuing a heavily-laden osprey. Upon being seriously threatened, the hawk drops his fish which is skilfully caught by the eagle before it strikes the water. The robber then unconcernedly flaps his way to a convenient perch where he eats the stolen fish at leisure and if still hungry, repeats his profitable foray at the first opportunity.

It was vacation time for me. Here were several weeks in which to become better acquainted with the bird life about our little cove and I resolved to cultivate the acquaintance of Mr. and Mrs. Osprey although it was evident that they much preferred my room to my company.

Near the tree which the fish hawks had chosen for their residence was another huge pine which conveniently forked at a point well above the height of the nest. With the aid of a rope and some spikes, I soon had a crude flight of steps leading up to the fork where I built a rough platform projecting several feet toward the nest. At the end of the

platform, I fixed a contraption of cleats and nails which would securely hold a reflecting camera in the inclined position necessary and found that by using only the front combination of my convertible lens I could obtain a fairly good close-up effect.

The nest itself with its three large eggs was soon photographed and having tied a silk fish-line to the shutter lever so as to control the camera from below, I found a hiding place on the ground about twenty yards from the tree. From my blind I could see when either bird returned home, but being unable to see the top of the nest, I could not tell the position of the hawk when photographed. I must trust to luck to secure a good pose.

THE LOOKOUT POST AND THE OSPREY NEST

A rude platform for camera and watcher was placed in the left-hand tree

Can an osprey count? The bird undoubtedly has a sense of numbers in a limited way. When the hawks discovered one person in the vicinity of their tree, they would take to flight at once with angry guttural clucks and shrill cries and whistles. Neither bird would return to the nest as long as the person, though hidden, remained in their neighborhood. After several unsuccessful attempts to secure a picture unassisted, I tried another plan. Two persons approached the tree. Shortly afterward one disappeared into our convenient hiding place while the other, in plain sight of the hawks, rowed a boat to the far side of the cove. Still the birds would not return to the nest although several tedious waits were staged. The hawks were plainly suspicious—not of the platform and camera, for they had been in position long enough for the birds to ignore them—but seemingly because of the missing person.

The third plan was more successful. Two persons approached the tree accompanied by a large white dog. One immediately hid while the other, with the dog, crossed the cove in the boat. Although the birds were plainly suspicious and circled about, protesting angrily, they apparently reassured themselves after carefully and repeatedly inspecting the entire vicinity of their tree, and one finally returned to the nest. Apparently they could distinguish the difference between one and two persons, but the presence of the dog seemed to make the problem too hard.

Observers report that the same pair of ospreys will return to their nest year after year, building it a little higher, larger and stronger each season and using it as a place of residence long after the young birds have left the nest. Other birds sometimes utilize the osprey's bulky structure of coarse sticks and cornstalks as a nesting place of their own. The notorious starling has no scruples about appropriating apartment space in the fish hawk's residence whenever he has an opportunity.

Our nest at its highest point measured about six feet high and nearly four feet across the top, but the lined depression for the eggs, when first prepared to receive them, was hardly over a foot in diameter. Surrounding the lining lay a considerable width of coarse material, the top of which was left very rough. This is too difficult for the baby birds to cross and keeps them safely in the nursery while the parents are away. The protection is a needed one for the nest was sixty-five feet from the ground and the young hawks were very active.

There are generally three or four eggs, rather larger than a hen's egg and light brown in color, more or less spotted with chocolate brown. The baby chicks are about the size of a newly hatched chicken and are rather woolly little fellows with scrawny necks, but unlike many baby birds they are not "all mouth". In proportion to their size, their mouths are rather small. Their light buff coloring is protective, and the young hawks, when huddled together, scarcely can be distinguished from the background of dead grass and rootlets which forms the lining of the nest. Nature improves the camouflage by providing the young hawks with a narrow white stripe down the middle of the back flanked by dark stripes on either side.

The art of concealing their young in the nest by methods closely akin to camouflage seems to be well understood by these wary birds. At the age of about three weeks the young hawks have a conspicuous covering of brown pin-feathers. The nest at this period contains dead weeds and dry oak leaves. These brown leaves and weeds are of the same general coloring as the baby birds and have apparently been brought to the nest for no other purpose than to add to the security of the young ones. The camouflage material in this instance could not possibly have fallen into the nest, due to its location and the absence of oak trees in the neighborhood.

The young osprey is not easily flustered in the presence of danger. When the photographer visited the camera in order to change the film and reset the shutter, the osprey chicks lay motionless, huddling together in the nest, and preventing a good picture. I then brought a long fishpole with a loop of wire fixed to the end and tried to push or pull the little fellows into more favorable positions. They scarcely cheeped but only huddled together the more tightly.

While this was going on both parent birds, with angry cries, were flying at the invader as closely as the intervening branches would permit, or circling above the tree with warning whistles which their babies clearly understood. Only when one of the parent birds was on the nest could a picture be obtained that would show the normal appearance of the young ospreys. When the young hawks were three weeks old they were larger than frying-size chickens but they still obeyed instantly the warning whistle of their parents and lay motionless in the nest when danger threatened their lofty home.

Baby birds are generally impatient and I thought that perhaps by waiting long enough in the opposite tree where I could see them, I might be able to get a picture of them that would show their appearance when three weeks old, but a two-hour wait in the tree convinced me that young fish hawks have fully as much patience as I have. An occasional inspection trip by the mother accompanied by a few warning whistles was all that was necessary to keep "heads down". Only when the parent birds were distracted by the approach of a number of buzzards, did the warnings cease for a considerable time, whereupon two of the babies finally raised their heads to see what it was all about.

A pair of fish hawks have something of the value of a watch dog. They quickly detect the approach of a person and give loud and unmistakable notice. The presence of their nest is sometimes said to be injurious to trees, but they often select dead or half-dead trees as nesting sites, where the view from the nest is not much obscured by leaves. Sometimes the nest is built on the top of a telegraph pole and instead of being rounded, is made high and narrow. During a rain storm the wet sticks and cornstalks cause short circuits in the wires, so that the telegraph companies soon detect and destroy them, but the hawks show great persistence in repeatedly rebuilding their nests under these adverse conditions.

The fish hawk's diet consists exclusively of fish, and he is an interesting and harmless part of the feathered life which adds its charm to our wood-fringed coasts and inland watercourses. We should conserve him.

THE SIX-TOED MASCOT POSES

Charles Livingston Bull, seen below in his studio, is now illustrating a series of articles for Nature Magazine. Above he sketches the latest generation of Hackensack Golf Club mascots

IMMORTALIZING A FELINE MASCOT

Concerning a Six-toed Tabby

Photographs by Schmidt Studios

THE LIFE of a golf club mascot is a dangerous one. It is technically responsible for dubbed mashie shots, topped drives, lost balls, missed putts, and slow foursomes. It is held accountable for unreplaced divots, thunder showers and long grass in the rough. And when one of them, as, for example, the unnamed, six-toed feline who guards the portals of the Hackensack, N. J., Golf Club, can boast that she is the latest generation of an unbroken twenty-five year line of cat mascots, all of them six-toed, and that she has not only survived, but become popular, her fame is assured. If she can also claim, as the Hackensack creature can, that Charles Livingston Bull, the illustrator, did her portrait, she may take an envysome position on the alley fence at midnight or any other time, and her right will be undisputed.

A quarter of a century ago the six-toed mother cat set up squatter's rights at the old Hackensack Golf Club; a six-toed descendant succeeded her, and so the line went on. Darwin might say that here was a case of special adaptation to meet specific conditions.

Mr. Bull, who has been portraying cats dwelling in all parts of the world, heard of the present incumbent to the office. She posed. And now the fortunate mascot bids fair to live long after her ninth life has expired in Mr. Bull's canvas zoology, probably the tamest tabby of all.

Adventuring with Maya

by Richard W. Westwood

WITHIN THE BEEHIVE

Few and far between have been the instances when the facilities and abilities of the motion picture industry have been applied to the production of worth while Nature movies. The owner of a home movie projector is able to supply himself quite well with Nature reels, but rarely does he go to the theatre and see a Nature motion picture of full or even short length. It is, therefore, an event when such a picture arrives, and it is distinctly so in the instance of "The Adventures of Maya" which had its American première in New York, in late April, at the Fifty-fifth Street Playhouse.

"Maya" is the film version of Waldemar Bonsel's novel, *Maya, The Adventures of a Little Bee*. It was adapted for film purposes by Mr. Bonsel and directed by him; made in Germany over a period of about four years, and released in this country by Edward L. Klein.

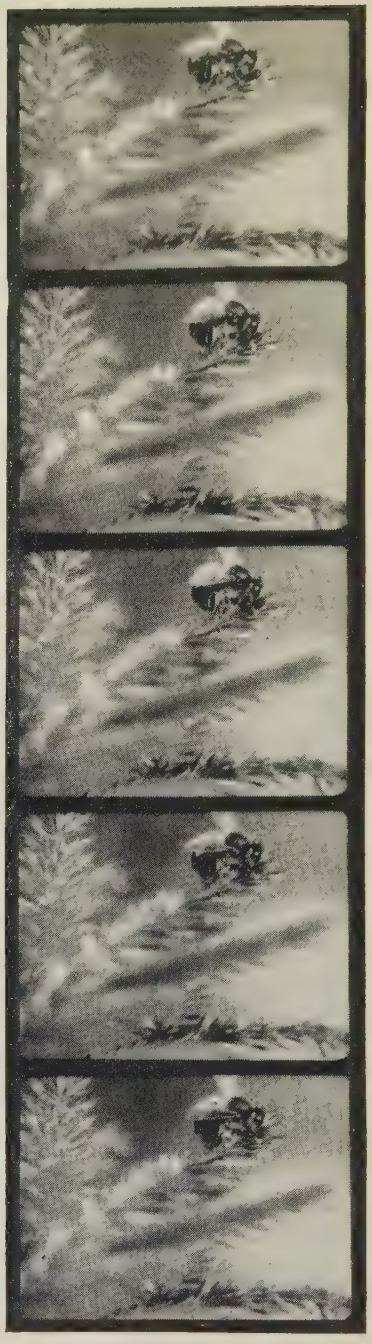
We are first introduced to the interior of the bee-hive and see Maya and her brothers and sisters emerge from their cell. Then also we witness the emergence of the queen bee from her regal suite, and see the busy workers going to and from the hive and at work within it. Finally we follow Maya on a voyage around the surrounding country —a trip that is filled with thrills and romance. Maya visits various flowers and sips their nectar; she seeks refuge from the rain in the cup of a tulip. She meets various individuals of the wild world, —mammal, reptile and insect. Atop some casual leaf she encounters a butterfly and there is told the story of its metamorphosis, which story is shown us, in all its never-failing wonders, from youthful caterpillar to lovely winged creature. Maya sees also the dragon-fly break from its case and spread its lovely wings and fly away. In her travels she encounters many fellow insects of curious and beautiful shapes.

Finally Maya hears the call of a scavenger beetle who has gotten turned over on his back and cannot right himself. She comes to his rescue and sets him on his feet, and amid his thanks flies away only to become entangled in the web of a spider who has been busily constructing a silken home for its prey. We see Maya entangled in the web and her captor rush out to encase her in its threads. Then Maya is taken away and hung up in the larder, struggling the meanwhile

(Continued on page 62)

SCAVENGER TO THE RESCUE

The beetle rescues Maya from the pantry of the hungry spider



MAYA ADVENTURES

Foot, Horse, Motor or Air?

Contrasts in Sequoia National Park Travel

by Col. John R. White

Superintendent, Sequoia National Park

THE Sequoia National Park is chiefly known for its almost illimitable stands of California bigtree or *Sequoia gigantea*. It is less well-known as a land of high mountains, crystal lakes, yosemite canyons, upland meadows, and fishing streams and few are informed that it has the greatest altitude range of any national park outside of Alaska,—from thirteen hundred feet at the park boundary near Ash Mountain Headquarters at the main entrance, to 14,501 feet at the summit of Mount Whitney.

The western portion of the park which contains the great Sequoia forests and which is partly developed by roads, public camps and hotels is cut off from the eastern part of the park both by the deep gorges of the Kaweah and Kern Rivers, and by the 13,000 foot peaks of the Great Western Divide. This eastern portion is not to be developed by roads; it is forever reserved as a "trail park" and is a gorgeous combination of mountain and canyon scenery with the thirty-mile yosemite of the Kern River and the fourteen thousand foot crest of the Sierra as the most prominent scenic features among many rivals. Nowhere in the United States is there finer scenery or better fishing streams and lakes than here.

Travel in the eastern section is, however, quite a problem. The eastern wall of the park, along the crest of the Sierra, may be approached by automobile via the Owens River Valley or "Inyo side," as it is generally known by those who live on the "San Joaquin Valley side," but this involves a ten or twelve hour automobile trip either via the Tehachapi or Walker Pass, far to the south of the Sequoia National Park, and then up the Mojave Desert to the little towns of Lone Pine, Independence and Bishop which nestle immediately below the whitened crags of the Sierra.

FOREST AND PARK SERVICES PLEDGE FRIENDSHIP

Superintendent Roy Boothe of Inyo National Forest and Col. White (right) "put it thar" on Mt. Whitney. Below is the pack train ready for the climb

There are other ways of transportation across the Sierra, however. Last summer I made three trips across it on park business,—one on horseback and afoot in six days, one in automobile in twelve hours, and one by airplane in fifty minutes. Duty required inspection of the trail being constructed to the summit of Mount Whitney, the highest mountain in the United States proper, and the securing, if possible, of a tract of a hundred and thirty acres of private land so located in the Kern Canyon as to be the key to the southern entrance.

My diary laconically describes my automobile trip from the west to the east side of the park. "Left Ash Mountain Headquarters with Acting Chief Ranger Cook at 4:45 a. m. Breakfast Bakers-

field 8 a. m. By Kern Canyon road to Democrat Springs and Isabella and via Walker Pass to Owens Valley. Arrived Lone Pine 4:30 p. m." That is a bald recital which does not tell of a hundred miles over paved highway to Bakersfield, then a twenty mile stretch through the oil fields and into the foothills where the Kern cuts a green gash through brown walls, and up the Kern Canyon by a perfect state highway to the little upland valley where Kernville and Isabella are completely walled in by hills which are almost mountains, for this is where the Sierra runs into the foothills which join it to the Coast Range. The diary did not mention the journey from Isabella over Walker Pass, which is 4,000 feet high, and the southernmost crossing of the Sierra, until the Owens River Valley with its dried lake beds and lava rifts came into the foreground, with the brown and barren mountains of Nevada in the distance. The diary also did not speak of a hundred miles and more up the graveled wash-boarded state highway which joins Los Angeles with the Owens River Valley, and which parallels the famous Los Angeles Aqueduct and the Sierra Nevada, nor mention how good Lone Pine looked at the end of the road,—a welcome green oasis in the midst of the sagebrush and greasewood of the near desert of the Owens River Valley.

LINDLEY EDDY

AMID THE BIG TREES

An airplane cannot disclose such beauty as this. Neither can fast-speeding automobiles

This long, hard, twelve-hour automobile trip from one side of the park to the other was followed by several days on foot and on horseback. The next morning Supervisor Roy Boothe of the Inyo National Forest came

HOW TO GET HERE?

Hamilton Lake, below, embraced by mountains, needs time for real appreciation

THE SIERRA FROM THE AIR

Mt. Whitney is the rounded peak at the right of the jagged pinnacles in the background. Will planes supplement the pack-horse and the trails in Sequoia National Park?

down from Bishop and together we went to the summit of Mount Whitney. From Lone Pine we drove nine miles up the canyon of Lone Pine Creek until the narrow, steep and rocky road ran out in the sagebrush and cactus, and a trail plunged into the junipers, white fir, and yellow pine which hung precariously over the creek that brawled riotously down from the slopes of the highest mountain in the United States. On horseback we rode three miles to Hunters' Flat where the canyon of Lone Pine Creek widens into a rocky flat among stately Jeffrey pines. This is destined some day to be the road terminus for Mount Whitney, and is an admirable site for a year-round hotel which in summer may be used as a base for the ascent of Mount Whitney, and in winter for snow sports.

From Hunters' Flat the trail ascends even more steeply, out of the Jeffrey pine and white fir belt into the zone of lodgepole pine and foxtail pine, past rock-bound lakes and marshy meadows, set like sapphires and emeralds in gray granite which rises in walls four thousand feet and more around them. And so, slowly and ever more steeply, up above timberline to a series of cold-looking ponds surrounded by mossy heather where our trail construction camp hugged a cliff for shelter from the winds that whirl along the backbone of California.

Boothe and I spent the night at the Mount Whitney trail camp. The following morning, together with Trail Foreman Koelker, we climbed slowly and laboriously up the talus slopes to Mount Whitney Pass at 13,700 feet elevation, where Boothe stood on the east side and I stood on the west side, while we clasped hands across the line which divides the Inyo National Forest from the Sequoia National Park. Then we followed the old Smithsonian trail to the summit of Whitney, having little difficulty in finding the general line of the old trail, although, of course, it had been carried away by snow and ice wherever it was located on steep slopes. This trail has been abandoned for more than twenty years, and was never more than a rough track to permit materials to be carried on mule back for the construction of the stone hut on the summit of Whitney. The Park Service is now engaged in building a high class trail to the summit and thence down to Crabtree Meadow on the west side, so that within a year or two it will be possible not only to ride horse or mule back to the top of the United States, but to make the trans-Sierran trip over the summit and down

A STUDY IN TRANSPORTATION

This map traces the routes of three trips taken by Col. White. Will airplanes be allowed here? The first conflict of this new means of travel has already presented itself in our national parks, and the Park Service is now puzzling over a solution. The Service has the power to keep airplanes out of the parks, but the advantages they bring are not arguments to be dismissed lightly

AIR CORPS, U. S. ARMY

THE GLORIES OF THE HIGH SIERRA

No weeks of leg-work could bring such a view as this. Man must take to the air for such effects. Each form of transportation brings its own point of view

to the Kern Canyon on the west side.

At the summit of Mount Whitney we parted ways, Boothe and Koelker returning to the trail camp on the east side, while I tumbled down the western slopes of the mountain three thousand feet or so to the head of horse transportation where Park Ranger Peck was awaiting me with my favorite horse, Camel.

Then followed a five day horse and pack trip with Rangers Peck and Fry up to the headwaters of the Kern at American Lakes, down the Kern to Junction Meadow and to a favorite camp near Chagoopa Falls, where the rainbow trout are large and plentiful, and so on down the canyon through that chain of lush green meadows to Camp Conterno at the Soda Spring, thence to Mineral King over Coyote Pass. At Mineral King I touched road transportation again for the first time since leaving Lone Pine six days before. It had taken me twelve hours by automobile and six days by horseback to cross the Sequoia National Park from west to east, and east to west.

A few weeks earlier I made the same journey in fifty minutes by airplane going east, and in an hour and a quarter returning west, including a detour to look at a forest fire.

The earlier trans-Sierra voyage by air was almost theatrical. There was the wait at the Visalia Airport during a broiling day in mid-June with the thermometer well over a hundred, and so naturally I at first poohpoohed the idea of the fur-lined flying suit which my pilot offered me, but I climbed into it and fifteen minutes later, I was blessing the precaution. At 13,000 feet there was a wind from the snowy peaks that whistled coldly through the open cockpit.

Soaring over Visalia we climbed steeply towards the distant line of mountains. Below us the colorful checkerboard of the vineyards, the orchards, the citrus groves, and the hay fields flowed rapidly by. In a few minutes we were following the canyon of the Kaweah river beyond Lemon Cove and familiar landmarks of the Sequoia National Park showed up Moro Rock with its gray four thousand foot cliff; Ash Mountain, Milk Ranch Peak, the winding brown ribbon of the Generals' Highway leading from the orange groves to the big trees; and at last the houses of Ash Mountain Headquarters, nine thousand feet below us. On the eastern journey from Visalia to the Sierra it is easy to gain altitude before crossing the high mountains because they are some thirty or forty miles distant by air from the valley towns and slope gradually to the highest ridges. But on the western voyage, leaving the towns of the Owens River Valley, it is necessary to spiral for many minutes before gaining altitude sufficient to cross the mountains which rise like a wall above the valley towns.

It was an astonishing thing to pass within five minutes from Ash Mountain Headquarters over Hockett Meadows, a journey that by automobile and horse would take a long day. And it was more astonishing to watch Hockett, Sand and Mitchell Meadows flow by a thousand feet below and then almost immediately to see the carved pinnacles of Coyote Pass beneath us; to follow the green streak of Coyote Creek for a minute or two and behold the three thousand foot walls of the Kern Canyon looming up. But two or three minutes more and we were over Kern Lake with the thirty miles of Kern Canyon opening to the left and the great series of meadows along Golden Trout Creek and towards Templeton Meadow on the right. Then, almost before

this magnificent panorama was grasped, the main crest of the Sierra appeared to the north and we were over Mulkey Meadows and Cottonwood Creek,—all in a few minutes, instead of the hours or days by horseback. It gave one a sense of dominance. Who were we to crawl laboriously like worms over the ground when we could wing like angels over the mountain tops?

And then, the climax! In a moment, in the twinkling of an eye, we topped the Sierra over Cottonwood Pass at 13,200 feet and saw beneath us the brown and gray expanse of the Owens River Valley with the green oases which marked the little towns of Little Lake, Lone Pine and Independence,—ten thousand feet almost straight down beneath our wings. Ten thousand feet down! I knew those ten thousand feet, I knew them well,—every turn of the trail, every rock and log, every pine and fir, every sagebrush or greasewood along the long, long, trail that leads from the crest of the Sierra slowly and laboriously down the eastern slopes to the packing bases at Carroll Creek and other points. A long day's trip it is by horse from the Sierra passes to the towns in the Owens River Valley.

But we poised in flight only a moment over the crest of the Sierra. Suddenly Lieutenant Barber pointed the nose of our ship down, down, down, down, and in one long glide, with motor throttled, we slid in five minutes or so from thirteen thousand feet above the Sierra to four thousand above the town of Lone Pine. I shall be restless until I repeat that experience. It was one of the great thrills in a life which has not been without thrills.

After a tricky landing in a dry lake bed, I proceeded to my business of securing an option on the one hundred and thirty acres of private holding at Kern Soda Springs. And I may remark here that but for the use of an airplane the government would have lost that piece of land with results that would have inconvenienced the park administration for all time. The owner was about to accept a telegraphic offer and it took over two hours' hard talking and persuasion for me to secure an option for the government.

This airplane journey and the return made me realize that whether we like it or not we are confronted by another change in transportation methods which must affect the national parks and forests, the mountains and the so-called desert or wilderness areas just as all were touched and changed by the transition from horse and buggy to automobile during the first quarter of the twentieth century. The change from horse to automobile took thousands of years. George Washington travelled by the same means as Nebuchadnezzar. But the change from automobile to airplane has taken only a decade or two. In September, 1928, the first airplane landed in Templeton Meadow, 8,500 feet up in the Sierra, having made the journey in about an hour from Visalia in the San Joaquin Valley. By automobile and horseback the same journey would take three days.

The national park policy as regards the use of airplanes in or over the parks has not yet been formulated. The director of the national parks feels that until there is a more general popular demand for the use of airplanes in the parks they should not be admitted; that the experimental stages may well be worked out elsewhere than in the national parks. In any case, it is believed that the sanctity and quietude of the parks should not be violated by the indiscriminate use of airplanes. Future regulations may prescribe the use of airports located within the parks at or near the entrances, with established flying routes to and over the parks between air ports, and also the prohibition of random flying so as to create only a minimum of disturbances.

But it is also realized that it is useless to play courtier to King Canute and attempt to stop by incantations the inevitable development of air transportation. A few years from now man will be as little satisfied to spend hours in an automobile, through hot valleys and hotter foothills, in order to reach the pleasant places of the pines and mountain meadows, as he would now be content to spend days travelling by horse or buggy. It will be a question of minutes instead of hours; as it is now a question of hours instead of days. Airplanes will rise from Bakersfield, for instance, with its one hundred plus degrees of summer temperature, and in a few minutes or an hour will be landing in sight of the crest of the Sierra. If we are to have sanctuaries where man may loaf, hike, or fish undisturbed by the roar of airplane engines overhead it may soon be necessary for us to mount our park rangers in the cockpit of a fast airplane rather than on the back of a bucking broncho to keep out air-trespassers.

But the airplane will never entirely supplant the automobile or the horse; at least not until it develops the power of hovering and permitting leisurely inspection of the scenery. A voyage over the Sierra by air, although exhilarating and even inspiring, is too rapid for that enjoyment of scenic glories which is earned by a long day's ride or hike to some view point or pinnacle where the mountains uplift their minarets of snow or the stars burn bright in the midnight sky.

No! The airplane will not supplant the automobile in park travel, but under proper regulations it some day will supplement the existing modes of travel and will have large uses both administratively and as a means of transporting park visitors to America's wonderlands.

August being the hottest and most sultry of months, Nature Magazine will make a special effort to keep off heating subjects in its next issue. David Starr Jordan is refreshing in his article, "The Booming Whale", while Lewis Walker entertains with "Sandino", a tale of the Marines' Nicaraguan ocelot pet. "Trees and Men", by Maurice Frink, shows the stranglehold forests have taken on the heart, as well as on the pocketbook, in America. "Crabbing with the Colonel", by E. G. Reinhard, is as delightful a human interest story as has ever graced the pages of Nature Magazine. These are but a few of the features to be enjoyed in the shade, on leisurely afternoons, during the coming month

The beaver goes in for reflective thought and accompanying ear-scratching

Perhaps he's mystified by his capture and his rowboat trip across the pond. He'd much rather swim the distance, thank you!

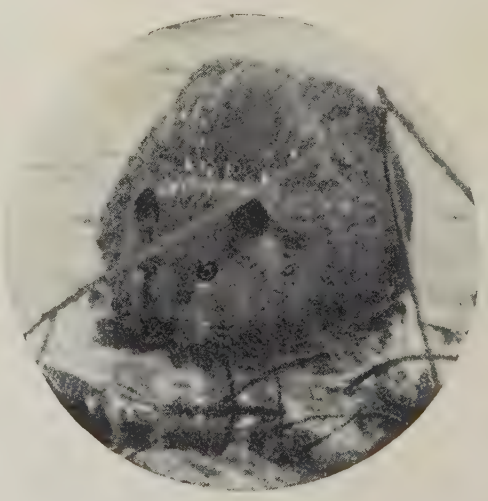
Just a friendly pose. The beaver wasn't as frightened as expected. He took his capture philosophically

Filming Beaver

LATE one afternoon on the first Glacier Park Expedition of Nature Magazine, some remarkable pictures were made of beaver at work rebuilding a dam destroyed by dynamite. These pictures, shown by William L. Finley in his lectures, aroused wide comment and commendation. Consequently one of the aims of the second

What kind of a game is this? No use struggling, though, after Vic the cook captures you on your way to the thick brush

"Now we will place the log this way." But the dam-building operations were startled by the camera shutter



An old beaver reaches for a bite of willow leaves. Below is the hind foot of the animal, showing the web which the front feet lack

expedition to the Park was to take advantage of the information gained on the first trip and to film the beaver more intimately.

The pictures on these pages present an exceptionally remarkable group of beaver poses obtained when the busy denizen of the lake was invited to camp with the members of the expedition over night. He performed nobly before the camera and did not seem to mind much being away from the family for the night. It is possible that he may have had some explanations to make when he reached home the next day, but once his peace was made it is likely that he had a tale of interest to tell that would relieve the tedium of many a long winter evening in local beaverdom. And who of all his flat-tailed brethren would dare dub him a fur-coated Baron Munchausen? There would be none.

At the left the captive quietly faces the camera. Note the almost human-like "hands." Below William L. Finley "trails" the released animal on its way water-ward

A signal slap of the water by a trowelled tail has brought this eager worker to help on the repair. He is "working like a beaver"

ONE OF THE MANY BEAUTIFUL SCENIC SPOTS IN GLACIER PARK
A view of Five Lakes from the notch in the Garden Wall, which will be seen on the third day of the tour

On to Glacier Park

Nature Magazine Tours Bring Enthusiastic Response

With the First Magazine Tour to Glacier National Park entirely reserved at the time of going to press with this issue and reservations for the second and third tours coming in rapidly, these unique pilgrimages to one of Nature's most glorious wonderlands have been received in a way which justifies the work and effort put into planning them. Based on the two seasons' experience of our own expeditions, and organized not for profit but for the benefits which a specially planned and directed trip will provide, they represent an investment which will pay infinite dividends in pleasure and information.

The members of the first party, leaving Chicago on July 6 on the Glacier Park train, will be greeted at the station by a representative of the American Nature Association who will accompany them through the Park. At the entrance to Glacier Park the special Nature Guide will join the group, and no time will be lost in taking the trail into the Park, after a restful night at Many Glacier Hotel.

In the special announcement of the tours,—a copy of which will be sent to anyone on request,—it has been possible to give only inadequate words to the beauties of Glacier Park and to outline in the same way the country to be covered. The beauties of such places, however, do not lend themselves easily to description. One must go and see and be conquered.

Besides its beauties of scenery, Glacier Park is rich in wild flowers, geological interest and wild life. The average visitor will see these things in a desultory way but likely will not gleam much knowledge of them unless a special effort is made. With our Nature Guide to identify and to describe, to interpret the history of the Park, to advise where those things sought by a group interested in Nature may be found, far more will be brought back from such a trip than the average visitor can bring.

A number of members of the first two tours, at least, are planning to continue on to the Coast and to other western National Parks or to Canada after the trip. This can easily be arranged and the Travel Editor is glad to lend all assistance and advice to such members in planning the continuation of the trip. All three parties will be augmented at the Park by people coming from western or southwestern points. The number of these, however, has been limited since it is necessary to have much smaller parties on a tour of this sort than on the more formal tours.

The Third Glacier Park Tour is being planned principally for teachers. The date of August 10 for the departure of the party from Chicago was selected with consideration of the fact that many teachers are taking summer courses during July. On this tour special emphasis will be placed on the provision of material for the teacher which will be of permanent value in school work where the teaching touches upon Nature study, general science or geography.

Reservations for the Second and Third Tours will be made in the order they are received and up to the limit set on membership. The Travel Editor of Nature Magazine will send full information as to costs (which have been reduced owing to a saving) and as to the simple equipment needed for the trip. The word is,—On to Glacier Park!

U. S. FOREST SERVICE

THE FOREST FIRE FIGHTERS

A woodland blaze is still a signal for hand-grubbing, blistered hands, back-breaking labor and actual danger, but the tractor promises relief

"Cats" *and* Forest Fires

The Tractor Finds a New Field

by Ward Shepard

In the mighty forests of the Pacific Coast states, a new type of "fearsome creature of the wild" is snorting his way through the wilderness. Vast, ludicrous, ungainly, brutally strong, he is familiarly and affectionately known to woodsmen and foresters as a "cat". In reality, he isn't a cat at all, but a "caterpillar", and he won his spurs in the Great War. This versatile monster, the tractor, is being tamed to new uses in the western forests. He has become a great factor in logging, and a worthy aid in fire protection.

Consider what an extraordinary machine the tractor is. It vastly extends the power and range of that primitive implement, the wheel. Concentrated within it is great power combined with extreme mobility. Wherever those flat, caterpillar feet can get a footing, there the tractor can go.

MAKING A FIRE LANE

The "cat" leaves its claw-marks on the hillside

It was at Cambrai, during the dark stalemate of trench warfare, that the caterpillar tractor proved its fighting qualities. Hitherto a humble implement of peaceful pursuits, and now transformed by arms and armor into the "tank", it suddenly roused the world's dark laughter by

"TRENCH WARFARE"

From this line the fire-fighters hold the advancing flames

K. D. SWAN

SNAKING OUT THE LOGS
With no seeming effort, the tractor does the work of many horses

the grotesque finality with which it marched through barbed wire, trenches, and machine gun nests. Here was an uncouth, fire-snorting, bullet-spitting, steel-ribbed monster that could do what the cavalry horse could no longer do—break clean through the trenches and end the deadlock of fixed warfare. The tank brought the war out into the open where it could be decided by strategy instead of by attrition.

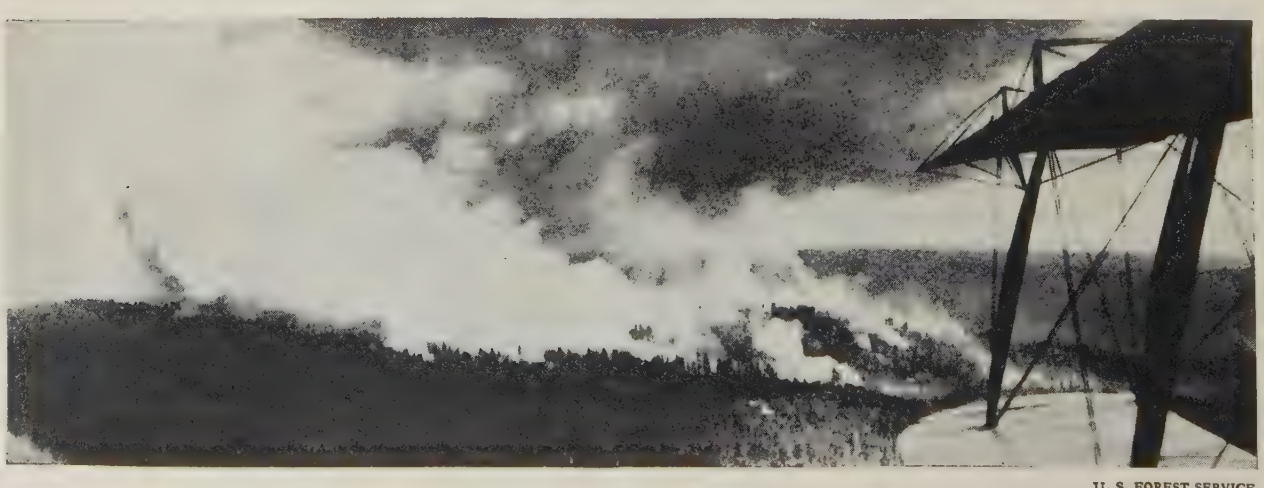
Now the same humorous monster is beginning to play an important part in the western forests. More massive, powerful, and patient even than Kipling's "elephants a-pilin' teak," the "cat" is being used to drag out the giant logs of the Pacific forests. But its latest and most unique exploit is building forest fire-breaks and experimental fire control lines. In some of the National Forests of California, the tractor has been cutting wide swaths through dense brush often ten to twelve feet high—and may cut equally wide swaths through some of the traditions of fire-fighting. For building control lines on going fires, the tractor is still in an experimental stage; but the results to date indicate promising possibilities.

Doubtless the caterpillar tractor can never play in the "civilian warfare" of fire-fighting the decisive rôle it played in the warfare of the trenches. Nevertheless the use of the tractor and of other types of machinery and improved equipment gives promise of lending important aid in the gigantic annual battle with the scourge of the forests. Nearly ninety thousand forest fires occur each year in the United States. Against this deadly enemy a far more powerful and skilful attack will have to be launched than ever before if that enemy is to be dislodged from its entrenched position and the red scourge whipped from the land.

In this attack, tractors and other machinery will play a part. In many regions they will add an element of concentrated power in building fire trenches that pick-and-shovel workers—the infantry of fire-fighting—can never attain.

How are fires fought? The city fire departments depend on water and chemicals. The forest fire departments, on the contrary, depend chiefly on the shovel, the axe, and the mattock. In attacking a forest fire, the customary method is to start on the flanks or sides and with axes, saws, grubhoes, shovels, and other tools to clear a fire trench, from eighteen to twenty-four inches wide, of all inflammable material—trees, brush, grass, leaves, and roots, down to the mineral soil. An ordi-

BREAKING THE TRAIL
Nothing stops the tractor. Below, another machine age contribution to fire-fighting, reconnoitres a big blaze and acts as the eyes of the ground force



U. S. FOREST SERVICE

CONCENTRATED POWER
The dogged persistence and great strength of the tractor make it an invaluable ally to man

U. S. FOREST SERVICE

nary, creeping ground fire will stop when it comes to the trench. Often, however, where there is dense ground cover, such as brush and fallen timber, the fire is likely to leap the trench. To prevent this catastrophe it is necessary to backfire. Under favorable conditions, usually at night when the air is cool, moist, and still, fires are set along the edge of the newly made trench and, moving slowly toward the approaching fire, consume the intervening fuel and leave nothing for the oncoming flames to feed on.

Control line construction may vary from the easy job of raking away the needles in a level pine forest to fighting through dense brush, tangled fallen timber, boulders, and roots on precipitous mountain slopes. The fire-fighting crew may vary, depending on the size of the fire, from two or three men to five hundred or a thousand, working from different camps on the perimeter of a fire that may cover many square miles, and sweep across several great watersheds. Such a fire requires many miles of control line. But whatever the conditions, the goal is always the same—to extend these lines along the flanks and finally across the front, pinching out the head of the fire.

A major difficulty in fire-fighting, especially among the mountain wildernesses of the West, is to concentrate enough man-power to permit rapid control line digging. Transport is often extremely difficult. And in rough going, line construction by hand is a slow, gruelling, man-killing job.

To the extent that machinery can replace man-power and speed up fire-trench construction it promises to make an important contribution to American forestry. The tractor is an example. The experiments made in the California district show that a tractor drawing a disk harrow or a heavy V-drag can build fire trenches fast and cheaply. Some of the idiosyncrasies that adapt the "cat" to warfare also adapt it to fire-fighting. One of these is its adaptability to rough terrain. The forest "cat" of the West pushes its way over rocks and windfalls and through brush and small timber, easily crushing down trees four or five inches in diameter. It will negotiate steep slopes that a wheeled motor cannot touch. It has great flexibility of handling, being able to turn around within its own length. And above all, within this flexible and versatile unit is concentrated great tractive power.

Speed of attack against forest fires requires concentrated power. Almost universally in the past this power has been supplied by human brawn and bone. Large groups of men, armed with mattock and shovel, axe and saw, rake and hoe, have hewed their way through heart-breaking obstacles, in smoke and heat, sometimes in imminent peril of their lives from a rushing crown fire.

Now machinery promises to take some of this heavy load of labor off the human back. First came the fire pump, a powerful and yet easily portable gasoline pump that will drive a stream of water through a thousand or fifteen hundred feet of hose. The pump can often be used for an auxiliary attack along the edge of a fire to strengthen the control line and is especially good for putting out "hot spots", such as fire raging in tangled windfalls or burning dead snags.

Next in the mechanical attack on fires came the horse and plow for plowing fire trenches. This ancient implement, under reasonably favorable conditions of soil and slope, has greatly speeded up the pace at which trenches can be dug, and incidentally has reduced the cost in proportion. Now comes the caterpillar tractor with prom-

THE TANKS LEAD THE BIG PUSH
But now the sword of war is being beaten into the plowshares of the peace-time tractor

ise of still further increasing this necessary speed.

What kind of implement is best used in conjunction with the tractor for digging control line remains to be seen. Probably under some conditions a plow will be best; under others a drag, or a disk plow; but on the whole the road grader seems best.

Where horse-power is used, underbrush of any considerable size must be "swamped" or grubbed out by hand ahead of the plow. But a tractor equipped with a road grader or a heavy drag tears the underbrush out by the roots and throws it to one side.

So far, the use of "cats" in constructing fire control lines on going fires is in an experimental stage. Much remains to be done in learning the types of country to which it is adaptable, and the types of implements that can best be used in conjunction with it. But that it has great potentialities no one can doubt who has seen it in action.

One drawback to using tractors on going fires, even where other conditions permit, is lack of roads in many forested regions that would permit bringing tractors to the fire control line. This is in many regions a temporary condition, however, for as intensive forest management develops, networks of permanent roads will have to be built for protection and lodging. But even with abundant roads, the "cat" is a slow traveler, resembling his namesake, the caterpillar, in the deliberation with which he pursues his way. In the army, heavy trucks are being used to haul tanks; and in foreign countries experiments are being made with tanks that have wheels which can be drawn up inside, like a turtle's legs, when the time comes for using the caterpillar form of locomotion. It is probable that the "cat" will become more mobile and therefore more useful in fire-fighting. And it is possible, too, that in other ways, the tractor can be modified to adapt it to forest conditions. It might, for instance, be made narrower, so as to move among large trees more easily.

But the tractor as a device in forest fire control is by no means limited to going fires. As forests become more valuable, as they come more and more to represent invested capital instead of a free gift of Nature, more money will be spent in "fire-proofing" them. One way is the fire-break—a cleared strip from fifteen to forty feet wide used to stop the advance of a fire or as a prepared-in-advance fire line for back-firing. Our more valuable and inflammable forests will one day be gridironed with fire-breaks. Already in the brush forests of southern California, where watershed protection is the chief forest value, extensive fire-breaks exist. They are often used in large forest plantations, such as in the Michigan National Forest. In various parts of the country experiments are being made with tractors for fire-break construction.

Not all manufacturers of tractors have waked up to the many potentialities of the tractor as a valuable tool in the management, protection, and utilization of our forests. Neither foresters nor lumbermen have given enough attention to working out the full range of its use in the forest. When these three forces join hands in adequate experimentation and education, we can reasonably expect the tractor to bear on its broad shoulders a heavy burden of responsibility in the timber-growing of the future and be man's great aid.

The IRISH SETTER

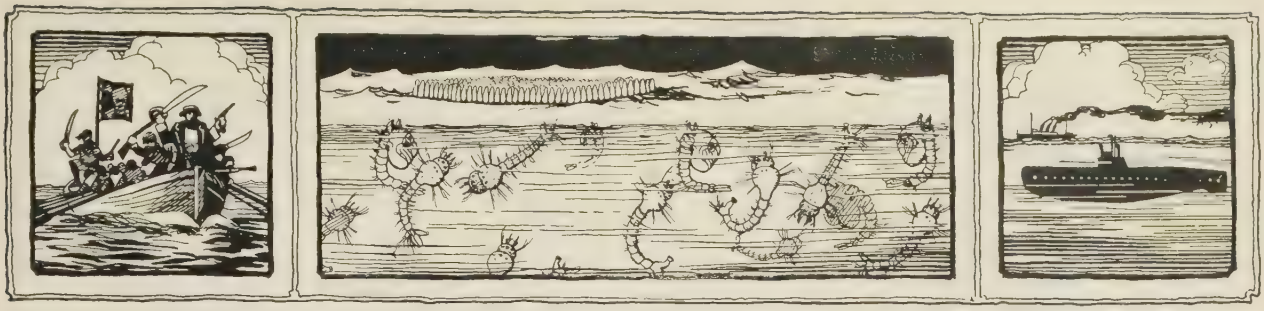
by Josephine Z. Rine

CHAMPION SETTER
This is Higgins' Red Pat owned by W. W. Higgins

THE setters are a spaniel development which was the natural result of the advance in hunting methods previous to the age of firearms. Whereas the spaniel crouched low as the net was flung over the bevy of partridge or quail, the setter merely directed the huntsman's attention to the game by means of his "stick" or "set". Much as the greyhound, going into different parts of the world, grew various coats and colors, so did the setter become three setters in as many lands. Thus we have the English, the Irish and the Scotch or Gordon setter, fundamentally alike but differing according to the way in which they have been bred. In Ireland there were originally two strains, one red and the other red and white; but the latter found scant favor with hunting folk and so was bred out in deference to the solid color, leaving its rival supreme.

The Irish or red setter, most refined of them all, is first and foremost a hunter, and if his training is a little more difficult than that of his brother setters, it is only because he is more highly strung, more intensely home-loving and individual. He has as good a bird sense as any of his family but his amiable disposition has in many instances served to keep him at home for petting rather than to send him afield to hunt.

He is smaller as well as finer than his brothers; the race horse type, as it were, as compared with the more heavily set English and Gordon. His head is long and lean, though deep and blocky in muzzle. His drooping, silky ears, hung low, add much to his expression of kindliness and his air of great devotion. His color is the color of the horse chestnut, and his fine coat carries long fringes on ears, legs and tail. A worker and a beauty is he.



Mrs. Mosquito Broadcasting

Anent the Natural Hysteria of Mrs. Culex and Family

by A. B. Champlain

Illustrated by Jex

WHETHER you like your eggs scrambled, poached or hard-boiled, has nothing to do with mosquitoes. But speaking of the many uses to which eggs can be put: did you ever hear of them being used as material for boat-building? A boat laden with eggs would not be so much of a novelty, but a boat made of eggs might be of interest. Mrs. Culex, who is only an ordinary mosquito, has provided, with maternal foresight, just such a boat as this. You may have overlooked it in your travels, but it is a common object in almost any pond, watering-trough or bit of slow-moving or stagnant water. There are boats in the rain-barrel now, at least there was one in it last summer and will be again.

This curiously-constructed craft, which we will attempt to describe, consists of three hundred or more—perhaps 399—flask-shaped eggs. Now get the microscope for a second; each egg is about seven-tenths of a millimeter in length and sixteen one-hundredths of a millimeter in diameter; no wonder we missed them before. One would think that a fifty-gallon rain-barrel would be ashamed to produce so small a prize-package as this. Each egg alone might be heavy enough to sink in water, but being coated with a sticky substance and combined in masses, they are formed into a sort of floating raft. When completed this craft of "incipient mischief" is perfectly buoyant and sea-worthy. It will float even though winds and rain may roughen the water in violent agitation; and even if submerged it will bob up again to the surface unwetted, and resume its proper position. A thin film of air that surrounds the eggs prevents a direct contact with the water.

After voyaging about the rain-barrel or pond for a few days, the numerous "initial lives" within the eggs, becoming ennuied with so monotonous an existence, proceed to hatch. It's all any mosquito could expect of an egg anyway. Here are born the cute little infant mosquitoes or "wigglers" so commonly observed. They do not resemble their father or mother at all; but they will—just wait.

At any rate they issue from the under side of the egg into the water, and completely abandon the raft of empty egg-shells. Here we will leave our boat with out a crew, a derelict to be reduced by storm and weather, a candidate for Davy Jones' Locker.

We may as well digress here long enough to tell the whole truth and then let Nature take her course. All mosquitoes do not build boats with their eggs! Some of them, such as the yellow-fever and malarial "kinds", lay theirs singly. But as that has nothing to do with the rest of the story and Mrs. Culex, we will proceed.

A peculiar thing about mosquitoes (and some others) is that, wherever they live, they accept it as a matter of course. So we will follow the fortunes of our little "wigglers", that have appeared on the threshold of active life, disguised as submarines. Fortunately they are born swimmers, but being somewhat contrary they do it up side down. Perhaps it is Nature that will have her joke, for our juvenile swimmers, the mosquito larvae, have been provided with a breathing apparatus at the end of the tail, instead of on the head. They extend the opening of this tube or pipe above the surface of the water, through which they suck in the air that they need, meanwhile poising themselves gracefully, head downward.

This breathing tube or air siphon, and other complicated tail appendages, in addition to surface tension, are the means whereby they maintain themselves at the top. Just catch a mosquito wiggler and look for your-

TO THE *story of the mosquito Mr. Champlain, State Entomologist of Pennsylvania, has devoted his ability to tell insect stories in popular and fascinating manner. It is an important subject and although Mr. Champlain has told the tale in a way that will bring a smile to the reader, he does emphasize the need of control. When we realize that one lone over-wintering female mosquito might conceivably produce some* 159,875,000,000 *offspring in a year the magnitude of the battle is plain*

self if you don't believe this. Also, like the submarine, they are heavier than water. When the fancy takes them, they release their grip on the surface and plump, down they drop. They go, however, provided with the means of re-ascending. Soon, with a series of jerks and contortions of bodies and tails, they swim upward again for air.

Like all forms of growing life, our wigglers must eat, and of course they feed mainly below the surface of the water. Heads pointed downward, they sift the "wheat from the chaff" that so plentifully inhabits the depth of ponds, rain-barrels and other breeding places. You cannot see the microscopic animals and particles of vegetable and organic matter that comprise their diets. These are smaller than the proverbial "gnat's eyelash." Wigglers are furnished on the head with a vibratory apparatus, composed of tufts of hairs that move with amazing speed. With these they sweep little currents of water into their mouths, and in this way their food is brought to them.

When they grow they change their skins as do all insect larvae. This happens several times during their infant lives, which only last a few days, depending on the seasons. Thus in a little while a new era arrives in the existence of our buoyant wigglers. But lately topsy-turvy, their bodies become altered in such a way that the tails are beneath and they swim with the heads upward. So you see—everything is coming out right side up, after all. Now we have the same creatures, in a different but equally curious stage of life. Buoyant as before, and still inhabiting the water, they are somewhat club-shaped and now known as mosquito pupae. This is the condition when the insect is supposed to be in deep repose, the intermediate stage between the infant and "grown-up" periods; a critical time in the life of any insect.

At any rate our mosquito pupae are able to move and swim. They can propel themselves through the water by bending their bodies and straightening them out again, but odd as it may seem they cannot eat. Dull business, you'll admit. All they can do is to wait around for something new to turn up. Frankly, nothing can be done about it—but when we realize that they have consumed enough food in the "wiggler" stage to carry them over the pupal stage, we feel somewhat relieved. They do have, however, two appendages or respirators, seated behind the head, resembling asses' ears. These organs are to the pupae what the tube or air-siphon was to the "wigglers," and the openings are held above water to obtain air.

After spending a few weary hours in this stage of active idleness, and fed only on air, our buoyant pupae are filled with an inherent desire to go upward. They have gradually developed a set of superior organs and now the most important change in their existence is ready to take place.

About the time of the year when the noon-day sun beams benignantly upon the tepid water, and the rain-barrel is tinged with yellows, browns and delicate greens, like a piece of Roquefort cheese, the mosquito pupae rise to the surface. Elevating heads and shoulders above their (as yet) native element, the pupae swell with pride and anticipation of the grand coming-out party in store for them. Then they burst their pupae skins between the "ears."

From this aperture the new and perfect insects make their debut before the waiting world, and the erstwhile skins are turned into life-boats; one for each individual occupant. Things are now moving so fast it is difficult to keep up with them, so we will concentrate on an individual mosquito, Mr. Culex, as he emerges from the shell of his past life.

As soon as the "split" is large enough, our insect is not long in showing himself. The new shoulders and head appear, the latter crowned with a pair of magnificent plumes, the feather-like feelers or antennae—while the former bear on each side a filmy wing that will soon be expanded and flung to the breeze. The stiff covering of his recent form, now serving as a boat, is the second one to which he owes his life.

We feel uneasy now, that in his struggles he should rock the boat. For were it to capsize when he was but half out we should see his finish in a watery grave. His upright body, with wings aspread, resting on the frail craft, suggests to us the hydroplane ready for a take off,—but he will soon be free. Meanwhile he draws from their sheaths his own six thin legs, and with delicate maneuvering brings them to position. Released from his uneasy predicament, he no doubt mutters a syllable or two of thankful-

"THEY TOO HAVE THEIR SEASONS OF LOVE AND COURTSHIP"

ness. A mosquito ought to be allowed some privacy of emotion anyway.

He gets nearer to the water and gingerly touches it with his foot. Splendid! It seems sufficiently firm and solid to bear his weight. No longer does he fear to drown, but scorning his former aquatic home he gazes upward for a brief instant in wonder and expectancy. He spreads his wings and rises (again buoyantly) and, like the "explorers of the sky," soars magnificently away, a winged inhabitant of the air. And at this moment the mosquito hordes "take off" from the rain-barrel and adjacent ponds, living images of their fathers and mothers!

Everybody knows what mosquitoes look like in a general way, but if we pay a little closer attention we should be forced to admire them. Their bodies are covered with delicate minute scales that present a charming appearance when viewed with a microscope. Even the edges and veins of the wings are covered with the little oblong plates or scales, arranged in neat symmetrical patterns. The compound eyes of a thousand facets are so large that they cover nearly the whole head—no wonder it is so difficult to sneak up on them—they side-step so cleverly. They now breathe by means of fine openings located in the sides of the thorax and abdomen. Here the interesting fact is strikingly brought to our attention, that the same insect has had to breathe air in three different ways and by three sets of organs, in three of its stages.

"THEY SPRING UPON US FROM BEHIND THE HEDGE....."

Until now the brothers and sisters, males and females, were very similar in structure, but in their winged state they are quite different. Aside from the difference of sex, the male is distinguished by the extra large and feathery appearance of his feelers or antennae (males are perhaps just a little snobbish on this score). He keeps to the far places, and on account of his elementary mouth-parts only regales himself upon the nectar of flowers, or quaffs the mild and insipid excretions of plants. No Volstead violations for him.

Do not accuse him of nefarious practices, for never does he enter doors or windows with blood-thirsty intent. Reserve your resentment and vengeance for his "better half," on whose head it will more justly fall. Now we might just as well chalk up another error against old Dame Nature, for Mrs. Culex is so unfeminine as to be satisfied with an indifferent head-dress, and she it is who has us hopelessly at a disadvantage and wears the long nose that is always prying into things. Her hard, long and slender proboscis, like the lancets and instruments in the surgeon's kit, are decidedly well adapted for piercing skins and sucking blood. Of course, in reality, but few of these blood-thirsty females ever have the opportunity to obtain such precious food. Something to be thankful for. Most of them must subsist on a more ordinary diet such as the sap of plants.

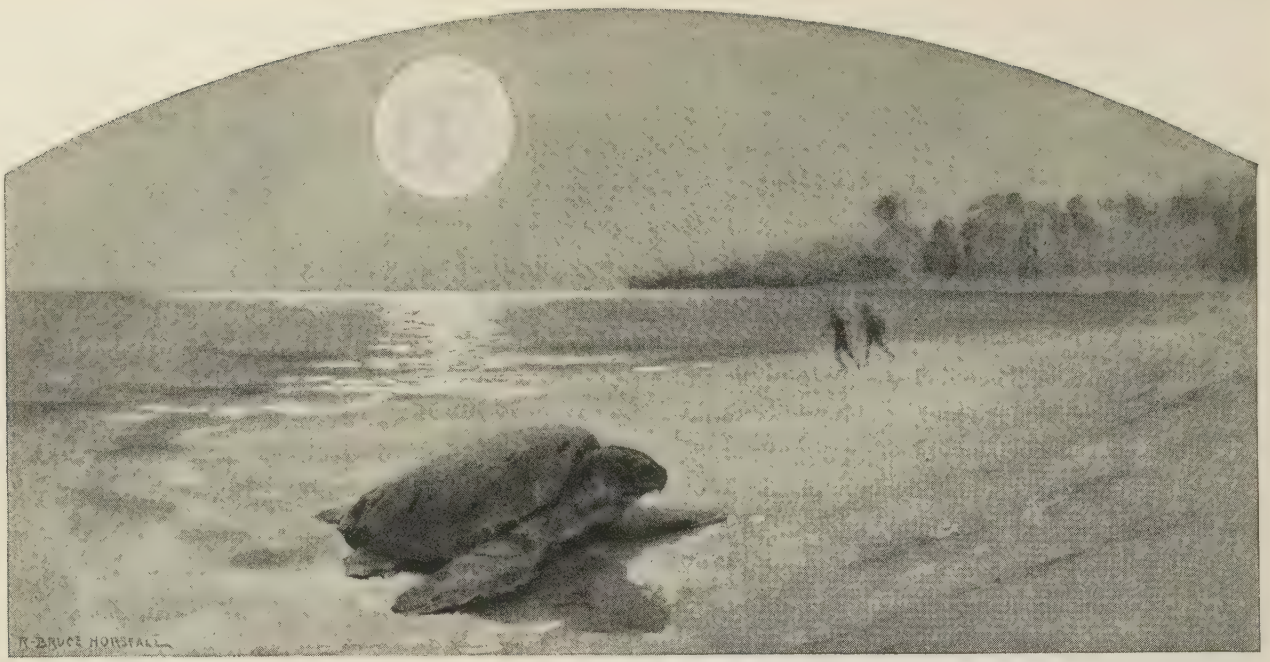
We know these perpetual plagues of the air and resent the stings that swell and itch and burn. Hers only are the needle lancets, the poisoned shafts and whirring wings, against which we must invoke protection,—the screens and veils, the sprays now sold, the liquid ointments smeared on body or clothing, the smudges or barrage of smoke—all combined to make us uncomfortable. We thoroughly enjoy the brutal task of swatting them; of taking countless lives in retaliation.

These thoughts may give you pain, but there is an agreeable side to this business. Think of the hand—or was it nose?—they have had in ten thousand romances. Here "one" gets a new viewpoint on the matter, and moments of sheer poetry and sentiment. In other years, to us their shrilly hum is blessed with happy memories; when arm in arm we strolled, in search of summer sunsets, o'er the lake; or benches in the park; a grassy lawn; the picnics in the woodland grove; a host of thoughts tucked in our memory books. Painful spots on neck, on hand, or arms or legs could never change these happy recollections. We have a kindly heart, in spite of bumps.

Mosquitoes have been radio fans for ages. Again we call attention to the plumed head-dress, the literal and personal antennae of Mr. Culex. Antennae are receiving organs for our insects as well as organs of feeling. The different hairs are vibrated by sound waves of the proper values and length. In this way the shrill call of the female of the species causes certain hairs on the antennae of her retiring mate to vibrate; thus he is able to determine the direction in which his "lady love" may be found.

So Mrs. Culex, now happily married, will away to the pond or rain-barrel. She will deposit the egg-boat after the manner of her ancestors—to perpetuate the mischievous pranks of mosquitoes. Don't forget that rain-barrels, puddles, ponds and all such places are welcome places for rearing large families.

How about mosquito birth control? The recommendations of the "higher ups" on mosquito lore advise that all bodies of water in which these pests are breeding ought to be drained. This applies equally to marshes, puddles, ponds and rain-barrels, or even to old tin cans. If this is too much trouble, a film of crude oil or kerosene sprinkled over the surface of the water will put the mosquito population *hors de combat.*



BENEATH THE TURTLE MOON

When Strange Things Happen on Carolina's Beach

by Elizabeth A. Martin

Illustrated by R. Bruce Horsfall

"TURTLE e-g-g-s! Turtle e-g-g-s!"—in high falsetto notes echoing down the street in melodious chant as two negro vendors approach each other. For years this has been a familiar call to us, but even to one accustomed to the varied street cries of South Carolina's Charleston it has a certain exotic flavor. Beside a high brick wall over which flaunt the scarlet flowers of a pomegranate tree, a barrow piled high with milk white eggs is always an arresting and picturesque sight.

From whence come they, these eggs which for many make such a delectable breakfast? In more northern climes there are the hunter's moon and the harvest moon, but on the Carolina Sea Islands the full moon in June is known as the turtle moon. Was it a legend that upon these glorious white nights of summer these monsters of the sea venture forth upon the beach and, just above high water mark, make their nests and accomplish their yearly maternal errand? We were resolved to find out.

Off we started, not in a tiny sail boat as would have befitted such a quest, but in a swift motor. Through roads like green tunnels, past tall pillars of the flaming trumpet flower and blue water lilies with the stately heron and fair egret always proclaiming this a semi-tropical country. Across many winding salt creeks, each with its own suggestive name. Whooping Creek, because a whoop can be heard across from one plantation to another; Salt Point Creek, because above this point the water is supposed never to become brackish, thus making it safe to use for the irrigation of rice; French Quarter Creek, reminiscent of a Huguenot settlement, and Cootah Creek, this being the local name for terrapin.

Too soon we reached our destination, a peninsula of land with on one side the open sea, and on the other a sweep of marsh. Over this the sun was setting, while out of the ocean rose the great full moon. No twilight there seemed to be, but as the sun sank below the horizon, long silver shadows appeared and glinted upon the serrated fan-shaped arms of the palmettos. The air became brittle with the shrill love song of the cicada, and nearby a chuck-will's-widow called.

So bewitching was the scene that I was not at all amazed to see slipping out from amongst the tree trunks a wood dryad. On her head was a visor (do dryads wear visors?), in her hands branches of myrtle held aloft. The bright moon disclosed my friend, the visor a bathing cap, and soon all of us similarly armed with the aromatic smelling myrtle boughs were swishing them about us to keep the mosquitoes away. Thus waving our branches before us, we hastened to the beach.

I can't vouch for the truth of this, but it is said that upon little frequented beaches there are always shells a-plenty. True it is that upon this remote beach there are vast quantities of the delicate sea biscuit, conchs, giant eyes, fairy boats, and an infinite variety of frail habitats of denizens of the deep. Tide had turned, the moon—the turtle moon—was at its full. All was propitious, though on the white sands there was not a trace

of what we had come in quest. What cared we? Midsummer's night madness was upon us! We caracoled in the light spume of the waves. Could there have ever been such a night before? As if in response to my thoughts my companion quoted: "Yes, Sophocles heard it long ago on the shores of the Aegean Sea."

From these musings we were arrested by a call from farther up the beach. We sped in its direction, and what should our astonished eyes behold but a mighty monster of the deep, to see whom we had come in half credulous search. There she was, this age-old creature, sprawling on the moonlit sands before us.

For many months these sea or loggerhead turtles voyage out to far distant southern waters, but unfailingly return once a year to the same nesting ground. Aroused by our screams of excitement, the preposterous looking creature turned seaward, and with ungainly lunges made for her native element. Knowing that our naturalist wished to study the barnacles on the giant shell, and determined to impede her progress, I made a quick spring and, with toes convulsively clutching the sloping back, contrived to get a foothold upon the now terrified creature. My strange steed plunged valiantly along for about one hundred yards. This turtle was positively bovine; her one idea was escape; on her short thick neck two great veins expanded as she labored along in her frantic struggle toward the water. I now perceived that we were very near the incoming waves, and fearing that when the enormous animal felt herself at home once more she might turn and rend me with those cruel jaws, I leaped off. To our surprise she ceased her exertions, stopped stock still, and there by the waves we left her,—completely exhausted.

Now for the eggs. To provide a warm nest for their hatching, the mother turtle scoops a hole in the sand and there deposits them. This done, with her large flippers, she replaces the sand; and with her broad flat body bears it down until it is as firm as the surrounding ground. Back to the ocean then goes the prospective mother and never knows the fate of her brood. This is the danger time. At first dawn or, as the natives term it, "day clean", before wind or tide has obliterated the crawl of the turtle, negroes issue forth with sharpened sticks. At the terminus of the crawl, easily distinguishable in the soft sand, they prod, until suddenly the stick goes through, and there is the quarry.

Would we have similar good fortune? Six crawls did we discover, but though we tore up the earth at the end of each one, not a nest did we come upon. When about to abandon the hunt, and give ourselves up to the wondrous beauty of the night, a stick manned with more perseverance than the others struck a hole. With cries of joy we all commenced throwing up the sand, along with which came egg after egg. Soon the moonlight was shining upon a gleaming pile of them—131 turtle eggs; our quest was rewarded with undreamt-of success. Some say they have seen an army of little turtles on their trial trip to the sea, and we have since been sorry we did not leave a few eggs perchance to bring forth more sea monsters, but there were five other crawls that night, though we dug only the one.

Now our only thought was to bear our loot home triumphantly and prove to the incredulous the truth of our nocturnal adventure. As we walked along with our heavily-weighted basket, more slowly now than when on the chase intent, we became aware that the errant breeze was bringing to us puffs of delicious perfume. For the first time our eyes, which had been riveted to the beach and water only, strayed inland. Barely beyond high tide was a luxuriant jungle of myrtle, cassina or yaupon, palmetto, and Spanish bayonet. The latter were in full bloom—tall slim stems ending in panicles of white bells. These myriads of little bells shaken by the night wind flung out a permeating sweetness.

The quality of the night had changed. Leaving the beach and walking through the dense, damp wood, the air was heavy, a forerunner of dawn, and wraith-like wisps of mist floated amongst the trees. It was almost four o'clock; a few minutes now and the short midsummer night would be ended, and the birds carol forth their welcome to the day. Our night of exploration, our glamorous night beneath the turtle moon, was over!

The night is spiritual; how it hides all things secular, how it blots out the common and the wearisome, how it nourishes our sense of mystery, and the profound. It adds the transcendental, the immeasurable, to our world. It uncovers the Heavens, they have a new meaning when we have walked under them at night. I would not forget the debt we owe to the day; life itself, and all that sustains it, light and warmth, cloud and sun, brought us here and keep us here. The gifts of the night are less tangible; the night does not come with fruit and flowers, and bread and meat; it comes with stars and star-dust, with mystery and nirvana.

—JOHN BURROUGHS

OGLEBAY PARK

by Paul T. Hannah

WITHIN a few miles of the spot where the Ohio carries its swirling, semi-liquid wastes in brown and ochre array past the levees and spouting smokestacks of Wheeling, West Virginia, an old brick manor house snuggles comfortably beneath leaf-covered branches. Beautiful avenues twine amid stout-limbed trees, natives of many different lands, and lead to its porte-cochère; great buildings scatter in clusters or squares around it like lackeys waiting for the command of a master. Broad lawns extend away from it to find, nearby, gardens and grazing stock, and at greater distances, the beauty of natural forest and stream. The mansion was once the home of Colonel E. W. Oglebay, iron magnate, and banker; now it is the hub from which the spokes of Nature study and civic recreation radiate through West Virginia.

When Colonel Oglebay died in 1926, and his estate at Waddington was left without the driving force which had landscaped its acres, imported its trees and made it a model agricultural farm, the city of Wheeling, in accordance with his will, began its jurisdiction over the seven hundred and fifty acre tract. The Park Commissioners, actually in charge, and Mr. Crispin Oglebay, a nephew of the donor, together with members of the Extension Division of West Virginia University, had a dream. They saw an opportunity to evolve a creation unique in American citydom. On this estate they could build a recreational and educational center to which would come not only seekers after Nature knowledge and those desirous of following agricultural ways, but the city-weary and the ones who wished to know art and music. They could make Waddington a rallying point to which Nature educators could come to study and to confer. And they began to make their dream come true.

ONE OF THE DRIVES AT WADDINGTON
They lead to pleasant gardens or groves of imported trees
They seek out Nature nooks where wild life roams

The Nature Training School at Waddington was one of the first achievements. Under the direction of the West Virginia Nature Association, a yearly two week course in Nature work was organized for teachers, camp counsellors, playground leaders and others interested in Nature. Seven hundred and fifty acres make a classroom which offers plenty of material for study in its eighty-acre nursery, its arboretum, its stretches of woodland and strange geological formations. Success seems to have smiled on the project. A. B. Brooks, former pathologist with the Bureau of Plant Industry of the Department of Agriculture,

"NOW THIS BIRD . . ."
A. B. Brooks, the park naturalist, thrills the city-weary in the picture on the left

THE MANSION HOUSE
The center of a civic experiment which is gaining national influence

was made Director of Nature Education, and Nature study assumed a twelve-month rôle. Citizens flock from Wheeling and the surrounding country to go on their Sunday morning bird walks, or their afternoon Nature tramps along the eight miles of well labelled Nature trails that are still lengthening. The State Geological Survey has labelled the rock strata; the arboretum trees are being marked. And in the living room of the mansion, which is just one of the sixty-eight buildings on the estate, a natural history museum is developing, and attracting increasing numbers, while the latest infant among the many children is a Nature library.

In the nursery there are over two million trees. Their growing will be instructive to those students who come to learn, and their beauty will decorate Wheeling parks and West Virginian homes. Five million trees is the goal. The arboretum is large for a private estate, but in the minds of the Park Commissioners who will enlarge it, it is small, and its eighty varieties of ornamental shade trees, multifarious kinds of shrubs, and its twenty-five tropical and sub-tropical species will soon have many companions.

It has not taken long for Waddington, or Oglebay Park, as the will of Colonel Oglebay renamed it, to bring the school children under its sphere of influence. Nature study will be taught on the estate to the majority of the pupils of Wheeling, while staff members deliver Nature lectures, illustrated with motion pictures, throughout the public schools of Wheeling and Ohio counties. Such an educational opportunity is indeed rare; few cities can boast of such facilities.

Summer is the heyday season at Oglebay Park. The Boy and Girl Scouts are there in their tents and lodges on the estate. Girls' clubs, and 4-H boys', women and men's farming organizations, and groups of Nature students roam at will, each attached to his separate star. Woodcraft and camp instruction is going on here; games are being played there; a Nature pageant perchance is being rehearsed on some grassy spot. Perhaps a group of scientists are studying in the fields.

Summer camping activities have burst forth with renewed vigor this summer, and so many applicants sought the advantages of Oglebay Park that the large dairy unit was converted into sleeping quarters, gymnasium, auditorium and dining rooms. The summer camp has proved itself already a success.

There are other pursuits besides those of Nature to draw the state's citizens to the old Mansion House. An art and handicraft program and music have been introduced; a little development will lead to golf, tennis and other games. Picnics are everyday occurrences. West Virginia's park is fast becoming a materialized paean to the out-of-doors.

While today it is mainly a civic centre and a refuge for the city-bred and noise-oppressed, this community enterprise is considered as a state institution, and undoubtedly will grow to national stature. The American Country Life Association has already moved from New York; national conventions will follow. It is a magnificent monument to the man who built it. It is a beacon by which other communities may find sufficient light to follow.

WHERE A CITY LEARNS OF NATURE
Boy and Girl Scouts, garden clubs, and even whole wards of citizens come here for bird and Nature walks

VOTES! VOTES! VOTES!

Ballots Sweep Rose Nearer Goal As Public Interest Quickens

THE National Flower Editor of Nature Magazine poked his head above the flood of ballots pouring in from all parts of the United States long enough to announce, just before press time, that the wild rose, steadily gaining, had rolled up a total of more than 210,000 votes out of a total of 457,801, while the columbine, with 91,657, the violet, with 50,328, and the goldenrod, supported by 44,701 followers, were still valiantly in the contest.

With public interest now at its height, with more than 10,000 votes a day reaching Nature Magazine, and with considerable opposition to the wild rose developing, the national flower question is far from settled. The polls will close at midnight December 1. The half-million total now achieved will be undoubtedly doubled. It is still anybody's contest, though the rose, whose English cousin reigns in things floral across the Atlantic, is now leading in all but four states.

More amazing than the gains of the rose, however, has been the clear demonstration by the citizenry that wild flowers have a place in the national heart. Newspapers in all sections have made themselves champions of this or that candidate. Business concerns, civic organizations, Nature clubs, boy and girl groups, schools —all walks of life are represented in the totals. In more than 30 states, political machinery has been set up to garner votes and secure representative opinions.

Ohio, the mother of six presidents, bids fair to play more than one-forty-eighth of a part in the final verdict, by collecting 47,343 ballots to date. This has been due principally to the complete state organization under the direction of the Federation of Woman's Clubs, led by Mrs. M. S. Thompson and Mrs. George McDonald.

Pennsylvania comes second with 36,267 votes, evoked by the remarkable work of Girl Scouts and Camp Fire girls. The nation-wide activity of the Daughters of the American Revolution, sponsored by Mrs. M. C. Turner, chairman of Conservation and Thrift Committee, has come to a head in Wisconsin, where Miss Gene Sturtevant, state chairman, together with John Callahan, state superintendent of schools, is largely responsible for more than 31,000 votes.

Though Washington started late, the political genius of Mrs. Alexander McEwan of the State Society for the Conservation of Wild Flowers and the publicity work of Matthew O'Connor of the Seattle Chamber of Commerce have put it in fourth place.

Eleven states—the four named above, and Michigan, Iowa, Missouri, Illinois, New York, Texas and Georgia —have polled more than 65% of the half-million total. Unless other commonwealths make certain their representation in the remaining few months, they will not have their proper influence in the choice. It is a question for the citizenry, however, whether these laggard states will preserve their proper sphere in this as in other national elections.

Now is the time for action. The home stretch is ahead.

CHILDREN OF DAYTON VOTE FOR NATIONAL EMBLEM

Part of the National Cash Register Company's welfare work are Saturday morning meetings with children, at which frequently nature subjects are stressed. These youngsters recently elected the violet as their choice

LOOKING INTO THE CRATER OF A POPPY
Here is one of the Shirley varieties, first reproduced by Reverend Wilks, that gave the flower its first fair name

GARDEN ARISTOCRATS

Poppies Bid for Flower Fame

by Dorothy Pletcher

Photographs by J. Horace McFarland Co.

One bright, sunny day about eighty years ago, the inhabitants of the little village of San Francisco were surprised to see a crowd of people rushing wildly down a nearby hill, each fighting for the lead with greedy recklessness, shrieking "Gold! gold!" as they ran. The good townsfolk then noticed that they halted suddenly at the foot of the hill, regarding each other sheepishly. They had scrambled into a bed of scintillating golden poppies. This most amusing incident of the gold-seeking days in pioneer California has often been recounted by the wife of one of these men who mistook poppies for gold.

The Indians, however, naïvely believed that the petals of the poppy—"Fire-flower" and "Great Spirit Flower" they called it—disappeared into the earth after they fell, and there formed the precious metal for which the pale faces so persistently sought.

Those delightfully romantic Spanish explorers in whose travels most of us revel, when sailing up and down the California coast several hundred years ago, even then noticed the beds of brilliant poppies which lighted up the slopes along the shore they referred to as "The Land of Fire". "At last I have found the Holy Grail!" cried one of their number, as he first came upon a golden poppy, and the story is told that he raised the flower and reverently touched his lips to its chalice of gold.

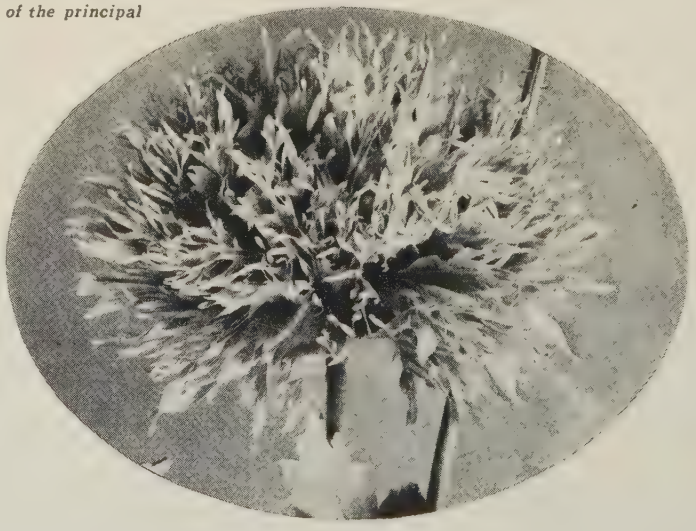
So much for fair California's poppy of which she

A HECTIC LITTLE GROUP THAT DO NOT SEEM TO BE WORRIED ABOUT ANYTHING

A FAR CRY IT IS FROM THESE TO THE OPIUM-PRODUCERS OF EASTERN LANDS

ONE OF THE MOST BEAUTIFUL, NUDICALE

At the right is an opium poppy, one of the principal aids to Morpheus



is justly proud. What of the other members of this great host of vivid flowers? Suppose we divide them into two groups—annuals and perennials. Those composing the former are *Papaver somniferum,* the opium poppy; *Papaver rhoeas,* the corn poppy; the horned poppy and the Hunnemannia or Mexican poppy. The perennials include the dashing Oriental poppy; those dainty rock garden habitués, the Iceland, Alpine, Thibet and Spanish poppies, and those most impressive fellows, poppies Plume and Romneya. All of these, both annual and perennial, come from seed, germinating in from one to three weeks after sowing.

The very oldest of cultivated poppies is the opium or sleep-bearing poppy, so largely grown in Persia, India and China for its milky juice, which, thickening as it exudes from the slashed capsules, becomes crude opium. As an important article of commerce it has long been grown in the Far East and in Europe where it has been improved. In this country our great flower wizard, Luther Burbank, interested himself in hybridizing the opium and Oriental poppies, the result of which was the hybrid everblooming poppy.

Not only do we create flowers hitherto unknown, but we borrow strange varieties from other countries. Blue poppies now bid fair to be a common sight in our gardens, specimens having recently been brought to the Arnold Arboretum from Kansu, China, by Dr. Joseph F. Rock, director of the Arboretum's three-year expedition to that country. These poppies are now being tested in New England for their ability to withstand the rigors of our northern climate.

From European fields and waste places comes the corn poppy, parent of the lovely Shirley. It was with this corn poppy that the French gardeners worked and finally produced a strain which was recognized as the best garden form up until 1886. And then the Reverend W. Wilks, secretary of England's Royal Horticultural Society, precipitated the Shirley into the flower mart. The world was taken aback by its delicate beauty.

Noticing in a bed of corn poppies one flower, and only one, with a narrow edge of white, he marked it and saved its seed. The following year, about five of the plants, out of a total of two hundred, had white edges. He continued with this plan for several years, the red being continually toned down by the larger infusions of white until one day he found that he had a pale-pink poppy, and another that was completely white. Writing of these experiments, he says, "I then set myself to change the black central portions of the flowers from black to yellow or white, and last fixed a strain with petals varying in color from the brightest scarlet to pure-white, with all shades of pink between and all varieties of flakes and edged flowers also, but all having yellow or white stamens and a white base." This explains the remarkable change in the status of this flower from that of a wild vagabond of the fields to a conspicuous aristocrat of the garden.

Being an annual, the Shirley poppy should be sown as early as possible in the spring. As it frowns severely on being transplanted, it must be planted to stay. Sow the seeds thinly—after a shower, if possible—and barely cover them, pressing down firmly. Let the plants have about a square foot of ground apiece, and be sure to place twigs or sticks about two and a half feet high among them so that they will be protected from destructive rains and wind. Naturally one doesn't want to overlook sowing seeds at intervals to insure a succession of bloom. Consult the seed catalogues and plan to have many kinds of poppies blooming from May

until frost—it can be done, even by amateur gardeners.

The Shirley's range of color is from snow-white through all the tints of pink, rose and carmine to the deepest crimson and blood-red, with many salmon shades. The nurserymen assure us that the Shirley wild-rose pink variety comes "almost one hundred per cent true from seed", while its color is a soft wild-rose pink.

Another attractive annual is the horned poppy, delicate, we'll admit, but really important as it persistently blooms from July till September, yes, even until frost if the seed pods are constantly removed. You wish to find something that will make a brave display in the flower border? Then, try this horned poppy that grows no higher than two feet at the most and that gives delightful red or purplish flowers instead of yellow and orange. In April start your seed indoors, transplanting to the garden's sunniest position when the soil first shows signs of being warm

Were the gardener questing for a flower which could be depended upon for astonishing effects in masses of color, he would undoubtedly plant the Hunnemannia or Mexican poppy because it perpetuates itself most freely and has striking gray foliage on stalks three feet in height.

The Oriental poppy usually commands more attention than any of its sister poppies. Bold, stunning, regally colorful with its crimson-scarlet, this barbaric flower that hails from Persia and Asia Minor has a way of dominating all other flowers. Being hardy, it promises to thrive in almost any type of garden soil, although it does, of course, prefer a deep, rich loam. And, during May and June, its huge cup-shaped blooms, that range in color from silvery-white through pink and salmon to crimson and black-maroon, more than repay us for any trouble.

Set the Oriental plants out in the fall or early spring before the first of May, watering them now and then during dry spells in the early part of the season; mulch them in the fall. Transplanting should be done in their dormant season, during August and September. When the early summer flowering is at an end, cut off the old flower stems, and after allowing the plants to rest for several weeks, water them regularly and generously. For this kind treatment they will then make new growth and a second crop of blooms will appear in the fall.

A SAUCY DUET

These two Thibets draw as much attention in the garden as they do as floral decoration for the house

MONUMENT TO A BURBANK TRIUMPH

This variety marks the success of the flower wizard to combine the opium and Oriental types into an ever-blooming hybrid

Some of the best Oriental poppies now being offered are Lord Lambourne, a new variety of a deep scarlet with the edges of the petals fringed, the only hardy poppy with this distinction; Mrs. Perry, a salmon-rose, a most desirable large poppy; Gerald Perry, having large blooms of apricot-pink, blotched with crimson; and Goliath, a large brilliant scarlet.

When casting about for rock garden tenants, one finds that those prominent members of the clan—poppies Iceland, Alpine, Thibet and Spanish—are ideal. With their crêpe-like blossoms, about two inches wide, borne singly on slender, leafless stems—for the grayish-green leaves are in a clump at the plant's base—they will obligingly make themselves at home in any vacancy in the garden and there put forth airy blooms from frost to frost. Let them grow merrily out of unexpected chinks in the garden wall; have them brighten up vague, lifeless spots among the rocks.

That little piquant Iceland poppy insists

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upon having drainage and a light sandy soil in a slightly raised position, if that be possible. The same is true of the Spanish poppy. Most generous in seeding, they come up of their own accord once they are established. One may have blooms by the middle of July by sowing the seed in a cold frame in February or March, and setting out the seedlings as soon as they are capable of being handled. Such varieties as Pearls of Dawn, with tones from cream through pink to orange, White Queen, which is entirely white, and orange-red Tangerine can be depended upon.

True to its name, the Alpine poppy loves an Alpine-like situation. Like the Iceland, it jauntily perches in the sunniest and rockiest of locations. It self-sows, though many advocate treating it as a biennial because it is short-lived. It is claimed that when the Alpine poppy grows on granite its blossoms are yellow or orange, but when on limestone, white blossoms come forth. A Swiss gardener who has spent many years growing Alpines tells us that the bees effect cross-pollination and so mix the colors of the different varieties that we can never be quite sure of the garden's ultimate color plan.

Recently introduced, the Thibet poppy, with dwarf habit and golden blossoms, is likewise valuable in the rock garden. But remember that a very moist soil is fraught with dire misfortune—usually failure—for this little fellow.

For shrubbery borders and bold groups to be enjoyed from a distance, our remaining friends, the Plume and Romneya poppies would do very nicely. During July and August —when the garden has that annoying habit of dwindling—the Plume poppy delights us with its huge eight-foot stems holding aloft ruffled foliage and creamy white flowers. Quite a perfect contribution for a wild garden!

The interesting diversity of double-flowering forms in the annual poppies may be seen in the peony-flowered and carnation-flowered types. These fluffy double annuals are being used for borders and beds, and such varieties as American Flag, Double Shirley and Mikado, the striped Japanese poppy, are proving very successful. A new double-flowering Oriental poppy, Olympia, is being offered; it puts forth flowers that are four inches in diameter, while in color they are a brilliant rich flame-scarlet overlaid with an iridescent glistening golden salmon. That is truly a flower to be included in next season's garden!

That poppies rapidly wilt when taken indoors is a common delusion. The poppy enthusiast knows that if one selects those blooms which are just beginning to open, cuts the stems near the ground, and carries them to the house, not in his hands, but loosely, in a basket and wrapped in paper, the poppies will not fail to behave beautifully once in the house. Plunging the stems for three minutes into boiling water and then putting them in cold water, will help to make the blooms last at least a week. Tall, fat vases are needed for giving the flowers plenty of water and holding them erect. Because of its daintiness, the Iceland poppy makes an excellent table decoration.

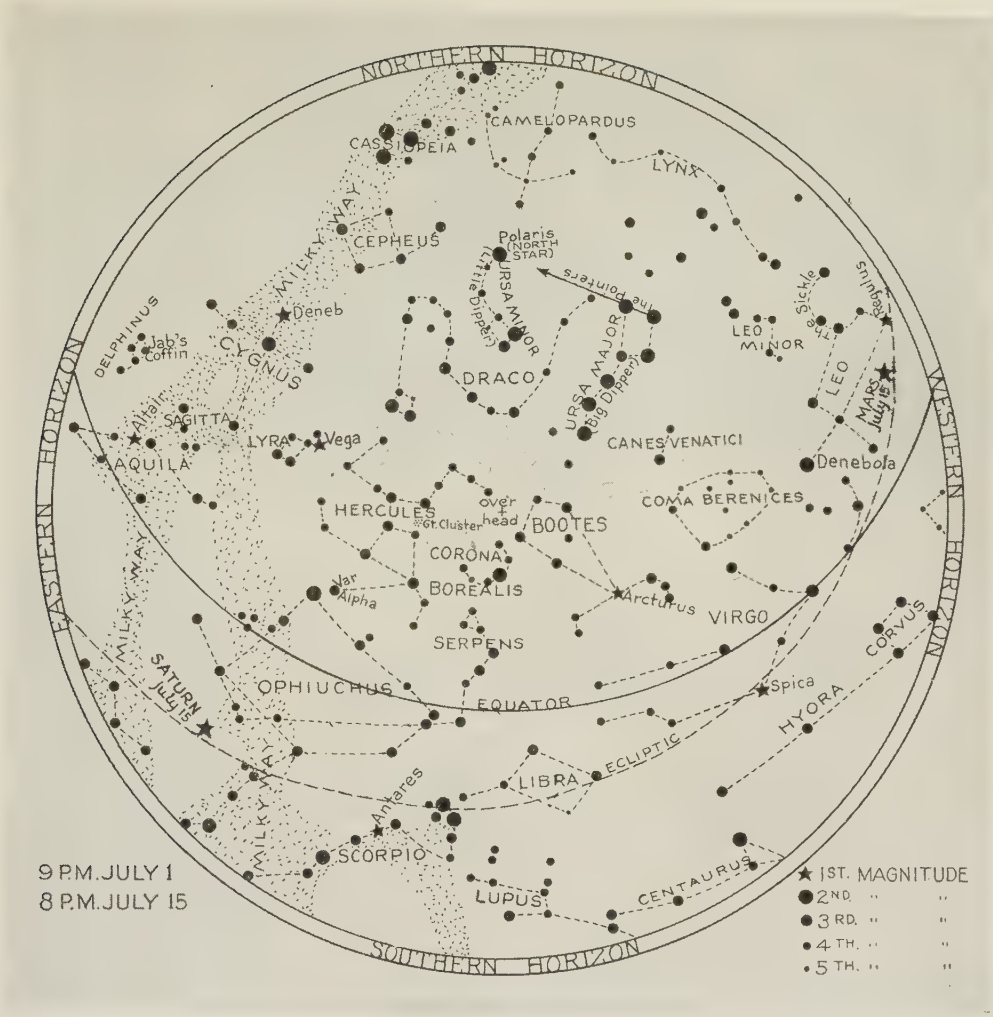
ORIENTALS ALL

The reward for hard labor finds its way into the home. This Oriental variety is particularly attractive

The advance made in the development of the poppy is nothing short of amazing; some varieties have been improved almost beyond recognition. As if by magic, masters of hybridization have transformed it from a native of the wilds into one of our most highly cultivated flowers. Perchance the next few years may witness changes in this flower as radical as those of the past, and then, shall we not reasonably expect to see a poppy that will surpass our rarest dreams of loveliness? The poppy must be rather bored with such constant attention, and perhaps wishes for a few years of retirement, far from plaudits and publicity. Its products have been subjects of international controversy; the most brilliant botanists of all time have cherished and worked over it. And now the future—will it bring still greater fame? It holds rich promise for the future.

He, therefore, who, amidst the unreconciled discord of nations, seeks for intellectual calm, gladly turns to contemplate the silent life of vegetation and the hidden activities of forces and powers operating in the sanctuaries of Nature; or, obedient to the inborn impulse which for thousands of years has glowed in the human breast, gazes upward in meditative contemplation on those celestial orbs, which are ever pursuing in undisturbed harmony their ancient and unchanging course.

—ALEXANDER VON HUMBOLDT



TO USE, HOLD OVER THE HEAD WITH TOP TOWARD THE NORTH

THE SUN'S FAMILY TREE

How the Planetesimal Theory Explains the Heavens

by Isabel M. Lewis

IN LAST month's article it was shown why the Nebular Hypothesis is no longer considered as a satisfactory explanation of all of the facts that are now known regarding our solar system, and has been almost universally abandoned by astronomers of today. We now pass to the consideration of The Planetesimal Theory of Chamberlin and Moulton which has survived critical examination for a period of about thirty years and has proved to be far more satisfactory than the Nebular Hypothesis in explaining all the outstanding features of the solar system and the peculiarities of the small bodies discovered in modern times which played havoc with some of the fundamental assumptions of La Place's Nebular Theory.

Professor T. C. Chamberlin, one of the most noted geologists, who died last November two months after the publication of his last contribution to this problem, "The Two Solar Families of The Sun's Children" exposed the weaknesses and inconsistencies of the Nebular Hypothesis and its attendant theory, Helmholtz' Contraction Theory, as far back as 1899, working jointly with Professor F. R. Moulton, the well-known astronomer and mathematician. Professor Chamberlin tested the theory from the standpoint of the geologist and found that it was far from being in accord with the findings of geologists regarding the age of the earth. According to the testimony of the rocks the earth's age must be reckoned in billions of years instead of the tens of millions of years permitted by the contraction theory of the source of the sun's heat. In this connection Professor Chamberlin anticipated the discoveries of scientists of today by fully a gener-

ation when he suggested that the chief source of solar heat would be found in "the internal constitution of the atoms" rather than in the contraction of the solar nebula. Almost prophetically in 1899 he wrote an article in *Science* entitled "On Lord Kelvin's Address on the Age of the Earth as an Abode Fitted For Life." In it he said, "Is present knowledge relative to the behavior of matter under such extraordinary conditions as obtain in the interior of the sun sufficiently exhaustive to warrant the assertion that no unrecognized sources of heat reside there? What the internal constitution of the atoms may be is as yet an open question. It is not improbable that they are complex organizations and the seats of tremendous energies." Today the chief source of solar heat and energy is recognized to be the release of subatomic energy, and it is now recognized that as a result the age of the sun and the stars may be a matter of at least billions of years, possibly even hundreds of billions of years, since this source of energy is practically inexhaustible.

Dr. Moulton, testing the theory of La Place from the astronomer's view-point, showed, also, that it contained many glaring inconsistencies. Realizing that the weaknesses of the old theory would eventually lead to its abandonment, Chamberlin and Moulton working in cooperation sought a theory of the origin of the solar system that would not be subject to the many objections that could be raised against the nebular theory. Finally they found a possible explanation in the effects upon the sun of the close approach of another star.

Granted an age for the sun and the stars, which are also suns, of billions or hundreds of billions of years, and recognizing the fact that not only our own sun but all of the stars are moving through space in all directions, it is certain that sooner or later there will be a close approach of a star to the sun. It is the assumption of the Planetesimal Theory that such a close approach did take place some billions of years ago and that the result was the birth of our solar system. It is assumed also that the distance from the sun of the passing star at closest approach did not greatly exceed that of the present planet Neptune. Under the attraction of the passing star the normal activity of the sun such as is now exhibited in the sunspot activity was tremendously increased and streams of sun-substances were shot forth from the sun both toward and away from the star. The lighter substances would be shot forth to greatest distances in the direction of the passing sun and the heavier masses in the opposite direction. This is supposed to account for the division of the solar family into the distant, lighter bodies, Jupiter, Saturn, Uranus and Neptune and the heavier, smaller, terrestrial group, consisting of the planets Mercury, Venus, Earth and Mars. The expelled substances were in the form of small particles named planetesimals which, through collisions, were swept up by larger masses, or nuclei. By the growth of these larger nuclei the eight major planets were formed.

Secondary nuclei associated with the larger nuclei became the satellites of the planets. The planetoids, or asteroids, occupied a zone in which there were no predominating nuclei so they have not grown as much as the planets by the addition of planetesimals. The effect of collisions between the nuclei and planetesimals would be to gradually reduce the orbit of the nuclei to a more nearly circular form, to decrease their inclinations and gradually to bring all of the nuclei more nearly into a common plane. The planetoids preserve more nearly the characteristics of the original planetesimals in their highly inclined, interlacing and highly flattened or eccentric orbits because they experienced few collisions with other planetesimals or nuclei.

The west to east direction of revolution of the nuclei and the majority of the satellites and asteroids was due to the attraction of the passing star in the plane of its orbit which would tend to give the nuclei a forward component of motion in the direction in which the star was moving. The attraction of the star along the plane of its orbit would also tend to draw the nuclei into a common plane.

The comets, according to the Planetesimal Theory, may have been caused by the explosion of lighter gases in various directions under the disturbing action of the passing sun, or, possibly, they represent matter ejected by the passing star.

The zodiacal light is known to be caused by the reflection of sunlight from swarms of small particles revolving around the sun near the plane of the earth's orbit. These small particles may be remnants of the original planetesimals that have not been swept up by larger members of the solar system.

The rings of Saturn are composed of swarms of particles revolving in the plane of the planet's equator. According to the Planetesimal Theory they are the remains of the outer portions of the original nucleus of that planet which were moving too fast to fall toward the center of the nucleus and to have continued to have a distinct existence apart from the planet. It is probable that collisions between the particles of Saturn's rings still occasionally take place and the result is that the dimensions of the rings are gradually decreasing and they may eventually disappear. They may have been much more extensive in the past than they are at present. It is also possible that other planets may have had ring systems in the past that have gradually disappeared.

In "The Origin of the Earth" (1916) and in "The Two Solar Families: The Sun's Children," Professor Chamberlin has considered in great detail and enlarged upon the original Planetesimal Theory through the addition of sub-hypotheses. An excellent account of the Planetesimal Theory also appears in Professor Moulton's "Introduction of Astronomy" (1916), as well as in a number of earlier scientific publications.

So far we have considered the two principal theories of the origin of the solar system and incidentally of our planet earth.

One of these theories has been proven to be untenable, the other is generally recognized as the most satisfactory of present day theories of the origin of the solar system and is at least an excellent working hypothesis. No theory is expected to be perfect or final and one may expect it to be modified or discarded as new knowledge bearing upon the problem is acquired.

(*Continued on page 60*)

Helps and Hints

FOR HOME AND GARDEN

JULY marks the ebb-tide of gardening, and is perhaps the hardest month of the ear, because the principal garden activity eems to be hoeing, weeding, tieing up after ail and rain storms and watering against ie drought.

* * *

There are several avenues of escape from ionotony this month, however. Freesias. xalis, for use in the house next winter, nd pansies, forget-me-nots, stocks and inks can be started now. Fall cuttings for lacs, forsythias, roses and clematis may be aken during this period. Be sure to cut elow the joint. The cuttings should be laced in sand, and watered well. Delphinums, after blooming, should be cut down, nd will pay for such apparent ingratitude y blooming again in the fall.

* * *

Plans for next season's campaign should egin at once, with your orders for bulbs laced with dealers. A resolution to vary little more from the ordinary types peraps would bring more individuality to our garden. There are so many new looms on the market that fairness forids us singling out any few, but a perusal f our advertisements will perhaps give ew ideas.

* * *

Roses for fall planting must claim a arge share of your attention during the ionth. Gather, too, the seeds of your most dmired perennials for next year's additons.

* * *

If you wish larger and more beautiful oses, give the plants, now and then, efore they come into bloom, an application of liquid manure. After the blooming eason apply a mulch of barnyard litter.

* * *

When syringing or spraying rose bushes ith kerosene emulsion, whale oil soap olution or any other insecticide, be sure hat the solution employed reaches the nder side of the foliage of the plants.

* * *

Peat moss has recently proved itself a ost excellent mulch for roses and other owers. It holds the moisture, fertilizes, nd lightens the soil. It can be applied berally without danger. Once it was used most exclusively by professional horticulturalists, but now every up-to-date ardener has a "bale" of it in his garden ouse. You must increase your amount of atering, however, when it is in use, for absorbs a great quantity of the moisture t otherwise would reach the plants.

* * *

H. Roy Mosnat is responsible for much the popularizing of the blazing star as addition to that wild flower list of garden nts suitable for hardy borders and tting. Concerning this hardy mid-wester which had recently found great favor

(Continued on page 57)

Rustic Hickory—*Rest in the Best*

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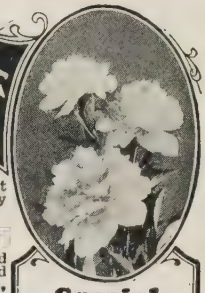

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NATURE IN PRINT

Controlling Insects

In our June number we issued campaign orders for the war against garden insects through the article by Alexander Laurie. Complete though this article was it is impossible to go into detail in the space limits of one magazine article and the gardener would do well to have a book on his shelves for handy and quick reference. One such book is *Insects and Their Control* by Alexander Wilson. Illustrated throughout with excellent pictures of the various enemy individuals, this book treats specifically with the best methods of controlling each one and thus producing garden results. It is both a valuable and handy book and is sold by Andrew Wilson, Springfield, New Jersey at $2.50.

Fiction Writing

In O'Neill's play, *Strange Interlude,* when young Sam confides to Charley Marsden, the author, his desire to write, Marsden remarks, for the audience's ears alone, "Why is it that everybody wants to write?" The answer was not given in the play, nor has it ever been given, but the fact remains. We do not doubt that a large percentage of our readers have had the same desire, and more would have given way to it, and perhaps succeeded, if a ready way of learning had been available. "Full many a flow'r is born to blush unseen and waste its fragrance on the desert air". To help those who are embryo literati we gladly recommend *Twenty Problems of the Fiction Writer,* a G. P. Putnam's Sons publication, written by John Gallishaw, former Assistant Dean of Harvard College and now head of a school of creative writing. The book is scholarly, scientific and straightforward. It is principally concerned with revealing the basic requirements for short stories and novels, many of the writing "tricks" and psychological mechanisms that must be utilized for success. The price is $5. You can make this up if, as and when you sell your first story.

A Siberian Odyssey

Why any man should care enough about the question of whether the mountain sheep reported to be living in the Chukotsk Peninsula in Siberia were *Ovis nivicola,* or *storki,* or *borealis,* or *alleni,* actually to leave a happy home, freeze for weeks on end, defy death, the worst elements of the Bolshevik Revolution, unfriendly foreigners, ice, snow, and the ignorance of untrustworthy Eskimos will probably be an unsolved mystery to the average American. Nevertheless John B. Burnham was worried about the problem, crossed over Bering Strait to frozen Siberia, struggled with officials, crazy native navigators, and all of the elements, and finally fought his way back to civilization after a series of adventures that would be enough for a whole township. The tale, as unwound in *The Rim of Mystery,* published by G. P. Putnam's Sons, for $3.50, is gripping and intense. A fairly good picture of Russian conditions far from Moscow, or rather Stalingrad, is portrayed by Mr. Burnham. After reading it you may be able to understand how strong the scientific spirit is when it really hits.

And so to Bed

In his preface to *The Gardener's Bed Book,* Richardson Wright has the temerity to discuss that boudoir problem of marital existence known as reading in bed. From the solicitude of the first six months' "Dear, you'll strain your eyes if you read any longer", he says, the progress is to the third year's order, "Put out that light." Apparently equally able at solving major marital problems and editing *House and Garden,* Mr. Wright rallies around with the solution. Indulge the other in the soporific of reading to sleep and then pull your own book from beneath the pillow. Lest the sleep be not sound and it be necessary to snap the book shut and the light off, have your book in little bits so that no train of thought will be interrupted. Having thus created his market and made an effective sales story, Mr. Wright introduces his book, —a delightful collection of amusing, helpful, original notes for the garden lover after the garden is swathed in robes of soft gloom and the slug makes his voracious way about. Space does not permit quotation at length but we must indulge ourselves in at least one which the author calls a "Prima Donna Job",—

"Among the lazy jobs that I enjoy none is more restful and yet capable of making me think that I actually have worked than disbudding. In early May we thin the Peony buds; in June, the scrub Apples and the Sweet Pea laterals are snipped off; in July and August the sidebuds of Dahlias; in September, the Chrysanthemums. As a breakfast appetizer, disbudding is supreme. Also it can be done when one is dressed in Sunday-go-to-meeting clothes. I always am seized with a disbudding urge about five minutes before guests are expected for dinner. Well, it's a good pose for a dressed-up gardener to be found in the sort of thing you see in Sunday supplements when prima donnas are 'discovered' in their gardens gowned as for 'Thais' and photographed registering tender affection toward a Sunflower."

The notes are arranged by months and each is interlarded with a sentence of advice. Lippincott are the publishers and would like two and one-half dollars for the book. Gladly, we say,—and so to bed.

R. W. W.

About English Birds

Mayhap some of our readers who have enjoyed L. Raymond Talbot's articles on birds of Europe will find added enjoyment in *From a Bird-Lover's Diary* by Arthur Astley, published by the Sheldon Press, London, and handled in this country by Macmillan. It should be of special interest to any bird-lover planning to visit the British Isles sooner or later.

Exploring Science

Another volume is added by C. C. Nelson Publishing Company, Appleton, Wisconsin, to the "Exploratory Science Series". This last volume is *Our Plant and Animal Neighbors* by Frank B. Younger. The thought of the book, which is a school text, is to educate to the relative value of these neighbors. The approach in these books is extremely interesting and of outstanding value to sections of the country where agriculture is the leading industry. We are happy to note that the author restrained himself from proscribing various hawks as unfriendly neighbors.

Other Books

The Flaming Bush—We are told that the desert has a continual lure and here are collected poems by the author, Ruby DeCorsaw Culver, in which are distilled the atmosphere of the sandy stretches. Published by the author at Sunset Canyon Country Club, Burbank, California, and listed at two dollars.

The Singing Soul—A book of poems designed "to bring new vision to eyes that see not the glory of mortality, new throbs to hearts that grow weary with disappointment." The work of Pearle Moore Stevens and published by The Stratford Company, Boston, to retail at two dollars.

The Pioneer Photographer—A textbook in the Pioneer Life Series dealing with the romance of getting the first photographs of many now famous western places. Written by William H. Jackson (the man who did it) with the help of H. R. Driggs, and published by the World Book Company, Yonkers-on-the-Hudson, for $1.40.

Flower Song—Sweet fiction about a very sweet girl and young woman; not truly a Nature book but with much Nature in it. From the pen of Helen Catheryn Willis and the press of The Stratford Company, Boston. Price $2.

Old Plymouth Trails—A collection of delightful essays on the equally delightful Cape Cod country; admirable for the Nature lover who takes the outdoor trail. Written by Winthrop Packard and available from him at Canton, Massachusetts, for a mere two dollars.

Famous Diamonds—An excellent and interesting discussion of the most famous diamonds in history by Oliver C. Farrington, Curator of Geology of the Field Museum of Natural History. Printed by that institution in Chicago and available for twenty-five cents.

The Truth About Snakes—A fine and needed leaflet exploding a lot of old folklore that seems to persist. Written by Karl P. Schmidt of the Field Museum and distributed by it for twenty cents.

The Frogs and Toads of the Chicago Area—In which Dr. Schmidt gives Chicagoans an opportunity to get acquainted with some of their neighbors. Also published by the Field Museum for which it asks a modest quarter.

Mushroom Culture for Amateurs—Just what the title suggests and of interest to all who love mushrooms as much as we do. Published as Farmers' Bulletin 1587-F and available from the United States Department of Agriculture, Washington, D. C., for the asking.

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Mr. Mosnat says:

"Florists have always been somewhat slow in making use of our native plants and flowers. But they are taking up blazing star in earnest, and using large quantities of cut spikes in Chicago and other large cities.

"There are a dozen species of this plant, but the Pycnostachya is the most useful and valuable, although seed of several others is listed in American and especially in English seed catalogues.

"The cut flower was used extensively last season intermingled with orange gladioli and lemon marigolds. The spikes are magenta colored, and grow up to five feet tall. The plant blooms from seed the second season. Its culture is very simple, and though it will grow on soil poorer than many other plants, it prefers fairly fertile soil. Its blooming season is late summer and early autumn. Both plants and seeds can be had from seedsmen and nurserymen."

Why not try this worthy newcomer to garden ranks another year? Further details regarding care and planting will be forwarded from our Garden Department on request.

* * *

One of the jewels for the rock garden is the dainty dwarf evergreen shrub, *Daphne cneorum*. This has a beautiful pink bloom in spring and usually flowers again in the fall. Either small plants from pots should be bought or else the nurseryman should furnish balled and burlapped plants. It may be planted in either fall or spring. The available supply of this is rather limited. It will cost from $1.50 to $2.00, depending on the size. It thrives best in poor soil.

* * *

If you are going away on a vacation and don't know what to do with the flower garden while you are gone, here is a suggestion. Give everything a good hoeing after a rain or soaking with the hose, then mulch the ground with grass cuttings. You will be surprised to see the thrifty condition of the plants when you return.

* * *

One of the most useful tools in the gardener's strong box is the little hand-cultivator, whose four prongs are an improvement on the trowel in making it easier to loosen the soil around the plants. It is a big help in weeding, too.

* * *

Show me the hand trowel you use and I'll tell what kind of a gardener you are. There is no one trowel for all uses. The gardener's arsenal should include at least three or four of different sizes. For moving clumps, a steel trowel with a five- or six-inch blade is needed. For transplanting, a long, narrow blade is preferable. A short three-inch blade trowel comes in handy with small clumps.

* * *

Two handy appliances for fighting insects and diseases are the hand sprayers and hand dusters. One can hardly get along without them.

The best spraying outfit for the amateur gardener to use is the knapsack sprayer, easy to handle and carry around. Cheaper handsprays, serviceable for small gardens, where there are only a few shrubs, are useless for bigger gardens. Among trees and shrubs a tank holding 25 to 50 pounds of liquid is necessary.

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NATURE NEWS AND Views

Nature Poem Contest

Once again the Chattanooga, Tennessee, Writer's Club announces the annual Nature poem contest established by Robert Sparks Walker in the memory of his wife, Elberta Clark Walker. Original, unpublished poems, signed with a pen name may be submitted up to the closing date of November 1, 1929. There are two main prizes of $20 and $10, the first for the best poem without geographical restriction and the second for the best poem by a southern writer living in the South. Manuscripts should be sent to Mrs. John H. Cantrell, 821 Vine Street, Chattanooga, Tennessee, who will also supply a copy of the complete rules.

Wise Nevada

Nevada is one of the two or three states in the Union that will not grant permits for the erection of billboards or any other form of notice on any location which may measureably destroy the natural beauty of the scenery, the Bureau of Public Roads of the United States Department of Agriculture recently reported. This is a step ahead. Relative to billboards, Thomas H. MacDonald, chief of the Bureau of Public Roads, recently declared: "It is unfair to the motoring public that the very industries which depend upon the highways for their whole business should be the worst offenders in erecting and maintaining thousands of glaring, disfiguring signs along our streets and highways."

Plant Motion Picture

A new film released by the Office of Motion Pictures of the United States Department of Agriculture is a three-reel motion picture entitled "Naturalized Plant Immigrants". This film follows the explorers of the Department to many parts of the world and reveals the travels of these floral immigrants to this country. It requires about forty minutes to show and can be borrowed at the cost of transportation alone. Requests should be directed to the Office of Motion Pictures, U. S. Department of Agriculture, Washington, D. C.

Applied Forestry Aided

To advance the knowledge and practice of forestry in the United States through field investigations and experiments and through developing examples of applied forestry, Charles Lathrop Pack, president of the American Tree Association, has made a gift of $200,000 to Yale University for the establishment of The Charles Lathrop Pack Forestry Foundation. Dean Henry S. Graves of the Yale School of Forestry, in announcing the gift, stated that the first work under the foundation will be a study of forestry as now practiced in the United States. He paid tribute to the economic foresight of Mr. Pack in his contributions to the cause of forestry to make possible practical demonstrations of its use.

Nesting Mourning Doves Suffer

In some of the sportsmen's periodicals, we note items protesting against the killing of mourning doves by gunners in certain of the Gulf States during September, when many of the birds, which normally raise several broods during the season, still have eggs or young in the nests. This killing was legalized in South Carolina, Florida, Alabama, Louisiana, and Mississippi by a Federal regulation, the so-called "split season," killing being allowed during September, the season being closed in October and part of November, and this period being followed by a second long open season. We are told that this concession is the result of a desire to please the sportsmen of these states. Naturally the killing of these gentle and harmless birds, at a season when considerable numbers have helpless young under their care, has aroused the indignation of lovers of our wild life, and it is observable that even some of the sportsmen are not pleased to be accorded the privilege of shooting nesting doves.

There are several ways of setting right this serious condition, and it is hoped that, before another season rolls around, measures forbidding such an inhuman practice will commend themselves to the State and Federal authorities concerned. The cause of the stricken birds might well become the concern of "The Loyal Legion of Nature Guardians" and like-minded Nature lovers throughout the south. Georgia, the home of this helpful organization of boys and girls, is not yet committed to the split season on doves, and we trust will have too much consideration for this lovely bird to joins the ranks of the despoilers.

Forestry Taxation

If trees are to be a crop, as any other crop, then they cannot be taxed over and over again under an antiquated land tax, and New Hampshire is one of the states fighting now to secure the complete cessation of annual taxes on forest land and the substitution of a 10% yield or felling tax when the timber is cut. The battle joins in the State Senate, bills for the relief of lumber owners having passed the House, and as usual, Philip W. Ayres, forester for the Society for Protection of N. H. Forests, is a leader in the attempt to gain the much-needed legislation. Perhaps a constitutional convention must be called to change the existing laws, but it has been needed, on other matters, for a long time. The rest of the country will watch the contest with interest, to discover if the Granite State, prolific, now, in idle land, will continue to tax out of existence the desire to reforest wasting acres and bring back beauty, as well as an important source of profit to the citizens.

Over the Top

Franklin County, Iowa, is the first county in which the Federated women's clubs voted 100% in the national flower campaign, and its example should spur other districts on to register a complete expression of opinion. The leader here was Mrs. Cyrus Wolf, who did not restrict her efforts merely to the voting, but also distributed wild flower conservation posters, conducted pageants designed to develop "wild flower consciousness", and held meetings to create interest in wild life. The county superintendent lent a hand to garner the school vote. Mrs. Wolf and her assistants should feel proud of their ability as electioneers

---

Sparrows Beware

J. P. Barrett of Ponca City, Oklahoma, is a lover of birds and around his home has more than thirty bird houses tenanted by many bird friends. He has a cement bird bath also and has been troubled with having this monopolized by sparrows. Using a transformer hooked up to the house current, a push-button switch and a Ford coil, he ran wires to the bath and when the sparrows were using the bath in great numbers thus electrified the water to a startling but not dangerous degree. Through this he discouraged sparrow visitors. The method is, perhaps, a little drastic and usually other birds are not entirely excluded by the sparrows, but we pass the device on thus.

Yosemite Nature School

The annual Yosemite School of Field Natural History will open its sessions on July 1 in Yosemite National Park, again dedicating itself to its purpose of training students to study and interpret living Nature that they may better enjoy life and also lead others to similar profit and enjoyment, thus making an educational contribution to the conservation of natural resources. The session will last until August 16. Details of the course may be obtained from the Educational Department, Yosemite National Park, California.

Outdoor Recreation

The continued interest in outdoor recreation on the part of cities and towns as well as individuals is seen by the annual report of the Playground and Recreation Association of America, which states that nearly 6,000 cities, towns and villages obtained advice and help from the organization on ways of bettering their recreation facilities. Proving that the drama probably arouses greater popular interest than any other art, the report cites over one thousand requests for plays. It was a wonderful day when America discovered it had an out-of-doors.

Want to Swap?

Daniel Lay, 1445 Avenue G., Beaumont, Texas, would like to swap butterflies and moths with fellow collectors.

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For Southern Gardeners

Gardening in the Lower South by H. Harold Hume, edited by Liberty Hyde Bailey, is a distinct contribution to horticultural literature. Written by a man long prominent in horticulture in the region he selects to cover, this volume gives complete directions for the pruning, planting and general care of Southern ornamentals and fruit plants, discusses the relation of plants to climate and considers soil, fertilizers, frosts and garden pests. Special chapters deal with palms, azaleas, roses, hedges, bamboos, bulbs, annuals and perennials, vines, window boxes and pot plants and the fruit garden. The book is well illustrated and covers the region which surrounds Charleston, S. C., extends southward along the Atlantic Coast and westward around the Gulf of Mexico. It is published by the Macmillan Company and is listed at five dollars.

True Tree Lover

In the annual Arbor and Bird Day publication gotten out by the Superintendent of Public Instruction of Illinois there is a remarkable article entitled "A True Tree Lover." It relates that David McDaniel, a 15-year-old student at the Illinois School for the Blind at Jacksonville, is able to identify correctly twenty-one different native trees of the State. Blind since birth, he knows them better than most of his fellow citizens by their bark, leaves and fruit. Nature study is his greatest interest.

Detroit Bird Haven

On the initiative of the *Detroit News*, the City Council recently approved the creation of a bird sanctuary and feeding ground on the Scott Middle Ground, between Belle Isle and the Detroit mainland. This site will serve as a resting and refueling place for migratory fowl in spring and fall. William E. Scripps, president of the *News*, offered to supply food for the birds and this offer was accepted by the Council. This is a distinct contribution to the cause of bird conservation.

By the Way

A new publication has made its appearance under the title *The Wayside Stand Magazine*. Since the first issue announced a prize contest for a permanent name it may be changed perhaps to By the Way, which was our bright idea and which we didn't send in. The publication is the outgrowth of the Wayside Stand Competitions conducted by the Art Center to discover really tasteful stands and bring forth plans for such. The magazine is dedicated to the improvement of the wayside stand business esthetically and practically. It is really constructive and we wish it much fortune.

Flower Sanctuary

With the sanction of the local Park Board, the Nature section of the Clinton, Iowa, Women's Club has set aside a part of Eagle Point Park as a sanctuary for Iowa wild flowers. This spot has been named the Gertrude M. Cole Wild Flower Sanctuary in memory of Mrs. Cole, who was long a leader in Nature activities in Clinton. The place selected is admirably adapted for its special purpose and includes a natural rock garden.

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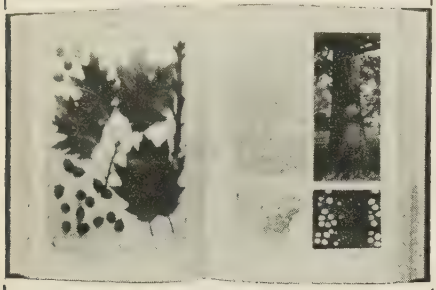

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THE SUN'S FAMILY TREE

(Continued from page 54)

The problem of the origin of the solar system is one that has long puzzled astronomers and geologists and one that cannot be regarded as solved in all its details at the present time. In our later articles we will consider some other theories of the present day that have a bearing upon this important problem.

We will now glance at the evening sky in July. Two planets will be found in the evening sky this month. Saturn is in Scorpio and appears as a yellowish, first magnitude star a few degrees north of the tail of Scorpio and south of Ophiuchus. It will be visible most of the night.

Mars is in Leo and sets about two hours after the sun, the middle of July. It is now no brighter than a second magnitude star but will be recognized immediately by its deep reddish color.

Mercury reaches western elongation on July 3 but is poorly placed for observation at that time since it will be very low in the northeast at sunrise.

Venus is now a brilliant morning star and rises about three hours before the sun during the month. Jupiter is now in Taurus and is conspicuous in the east before sunrise.

On July 4 the earth is in aphelion or farthest from the sun. Its distance is then 94,452,000 miles from the sun. It has always seemed to be a puzzling fact to many that the earth should be farthest from the sun in summer. That is in the summer of the northern hemisphere, however. Were we in the southern hemisphere the sun would be *nearest* the earth in summer. For the earth is in perihelion about Jan. 1. A change of a few million miles in the distance of the earth from the sun has far less effect upon the temperature than a change in the slant of the sun's rays with the seasons. It is a debatable question whether the summers of the southern hemisphere are any warmer than those of the northern hemisphere in spite of the fact that the sun is several million miles nearer the earth in the southern summer than it is in the northern.

The finest stars of these summer evenings are Arcturus in Boötes, now high in the west, Vega in Lyra, high in the northeast, the fiery red Antares, rival of Mars, in Scorpio in the southeast, Altair to the southeast of Vega, in Aquila, Spica in Virgo, in the southwest, and Regulus in Leo, low in the west. The Big Dipper is now high in the northwestern sky and the Milky Way is coming well into view in the eastern sky.

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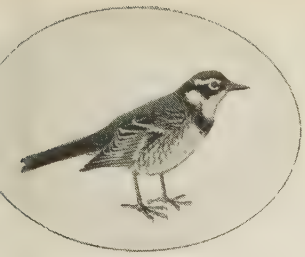

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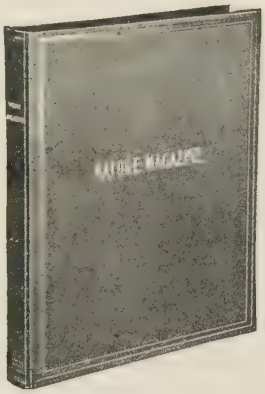

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ADVENTURING WITH MAYA

(Continued from page 28)

and calling for help in the insect tongue. To her assistance comes the scavenger beetle, making his uncertain way up a precipitous twig and cutting loose the captive bee. With wonder we watch the scavenger beetle unraveling the threads which surround the bee and finally releasing her.

On her way back to the hive Maya encounters a hornet and finally escapes from a struggle to return to the hive before there is a descent of a horde of hornets upon the home of the bee.

The film closes with a struggle, both inside and without the hive, between the bees and the hornets which is epic and worthy of David W. Griffith in the mass formation of the fighters. Suffering heavy losses, the bees nevertheless are finally triumphant and we see the last three or four remaining hornets wearily dragging themselves from the field of battle.

It is undoubtedly true that there are moments in this film which will not stand the severe test when the light of scientific knowledge is turned upon them. Entomologists may say that hornets do not normally attack the bee hives. Whether or not they were introduced and urged to fight here we do not know, but suffice it that they did, and it was noble carnage.

So be it, that parts of this film are fantasy. Fault though this may be, we do not feel that it is a fatal fault. Enough it is that here is a film charmingly conceived and remarkably pictured which must inevitably inspire a greater interest in Nature and her works, and a more sincere appreciation of her wonders. It is to be hoped that Maya will be given the wide showing in this country which the film richly deserves.

Violet and Dogwood

With the publication in April of the qualifications of the wild rose, columbine, goldenrod and phlox as national flowers, the field was not exhausted, and below are the lucid arguments of F. Schuyler Mathews, author of the Field Book of American Wild Flowers *and other books, in support of the violet, and the reasoning of P. L. Ricker, president of the Wild Flower Preservation Society, who advocates the dogwood.*

The Violet

F. Schuyler Mathews

The violet is a fortunate flower. There are many reasons why it should receive serious consideration as the National Flower of the United States, reasons irrespective of sentiment. We are apt to think of the violet as modest and dainty—true; but far more than that, it is brave and determined beyond comparison, audacious, resourceful and independent.

It is even ubiquitous, if you please, and scorns the arctic cold as it climbs the rocky mountain to a height of 7000 feet, and the sultry heat as it descends to the low swamp at sea-level. There is no state in the Union where it fails to show its face. Indeed, it is found at the arctic circle in Alaska and Greenland as well as under the sunny skies of Arizona and Mexico. Two of the family are significantly named

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Viola labradorica and *Viola floridana*. What more would you—modest? Very well, it grows at your feet a scarce two inches high, its tiny, winning face barely half an inch across. A violet-blue-eyed sister hides in a woodsy dell beside the spring and you have to push its crowding neighbors aside to find it. And how independent! If stormy days come and its friend the bee fails to cöoperate in the process of cross-fertilization it sends out over or beneath the ground long stems bearing flower-buds which contain all the component organs essential to self-fertilization! This is equivalent to the flower saying—"If nobody will help me I must help myself,—but anyway, I am bound to live!"

Again, there are the frosty white bushy miniature mustaches directly over the inviting little mouth of the flower. No thieving ant or plundering beetle may pass that barrier to sip the sweet nectar within. Only the long tongue of the pollen-carrying bee may enter. Surely this is a resourceful bit of self-protection.

Still, we have not yet fully gauged the strong character of the violet. It may be modest but, *per contra,* in numbers it appears to possess the United States! The genus Viola comprises seventy-five perfectly good species and no less than eighty-two distinct hybrids! There is the whole story. If there is anything which signifies the determination of a plant to work its way in the world and incidentally into popular recognition, that something is shown in the indomitable violet. If there is any flower which can typify more perfectly the enterprise, the resourcefulness, and the serious determination which stamp the character of this great American Nation, I wonder what that flower may be!

Flowering Dogwood

by P. L. Ricker

For a national flower one should be selected that is conspicuously attractive and found wild in great abundance through a considerable part of the country. It should be well adapted for conventional design, suitable for cultivation and general planting in the home grounds, parks, or for beautifying the roadsides. Of all the flowers that have been suggested there is just one that is outstanding in these respects and that is the flowering dogwood with two very similar species, one of which, *Cornus florida,* is found from Maine to Florida, west to Minnesota and Texas; the other, *Cornus nuttallii,* is found mostly in the lower mountains and foothills from Washington to California and east to Idaho and Nevada. In some of the outlying parts of these ranges the small dogwood trees are not abundant, but throughout much of their range they are found in great abundance, often lining woodland roadsides for miles. What could be more beautiful than the planting of thousands of these attractive flowered trees along our country roads?

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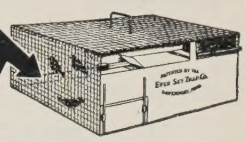

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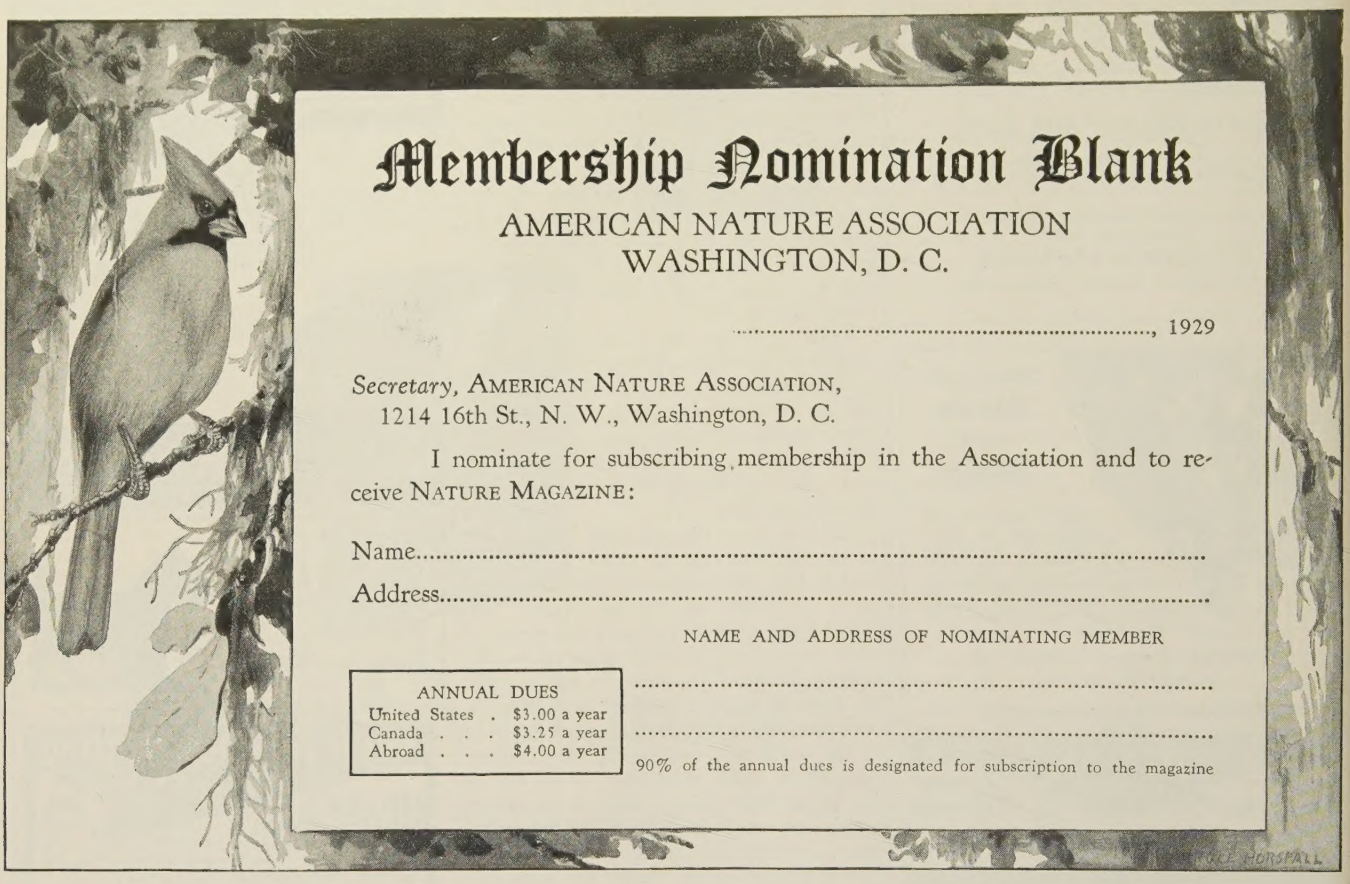

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The American Tree Association stands for a constructive policy of forest protection and extension, to increase appreciation of forests as natural resources essential to the sound economic future of the country.

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MINNESOTA IS LAGGING IN FORESTRY'S MARCH

New York Takes Progressive Step while Wisconsin, Massachusetts, Oregon and Idaho Look Ahead

Forestry is on the march in many states. Forest planting is taking hold and idle land is being put to work or will be on a scale that means much to the future of the country. Reports to the American Tree Association show Minnesota to be lagging in the progressive movement but New York, Oregon, Idaho, Wisconsin and Massachusetts are looking ahead.

Of the four most important bills in the forestry program recommended to the Minnesota Legislature by an interim legislative committee on reforestation, three failed of passage in the Senate, after overwhelming victories in the House. The fourtn bill was vetoed by Gov. Christianson.

The following bills were passed by both houses and signed by the governor: appropriating $40,000 for a land economic survey of the timber region; providing for interchange of state and federal forest lands to allow consolidation for forest management; reducing tax on private land designated for permanent forestry from 8 cents to 5 cents an acre, plus 3-cent fire tax and 10 per cent yield tax; strengthening fire laws and holding persons responsible for starting fires in the woods; authorizing state forester to accept gifts of land of 40 acres or less as sites for fire towers or headquarters, and empowering him to condemn lands for that purpose; and providing means to combat white pine blister rust.

Gov. Roosevelt putting his signature to two forestry bills marked the culmination of years of public education in forestry. People are becoming more forest-minded. Planting trees has a popular appeal. Altho there are many other important phases of the subject that deserve and must receive attention, this is something generally understood and appreciated by the public. Construction of 400 seed beds in the Conservation Department's new forest nursery was begun within 48 hours after the bill providing for the work was signed. All the land not required for the seed beds will be cover cropped this summer and in the fall 500 more seed beds will be laid out. The 400 seed beds already under construction will produce between 4,000,000 and 5,000,000 two year old seedlings that will be ready for planting by the spring of 1931, or three year old transplants by the spring of 1932. By the fall of 1932 the nursery will be running at full capacity with an output of from 10,000,000 to 15,000,000 young trees a year. The state has now in its five nurseries at Saratoga, Lowville, Lake Clear, Horseheads and Painted Post, 530 acres of actual ground area available for growing young forest planting stock. This area will give a total nursery inventory of about 150,000,000 young trees with an annual output of 50,000,000.

In Idaho Gov. Baldridge has signed the reforestation bill. Operation of the law is expected to prove a great asset in the program to reforest the hills denuded by lumbering or fires. Forestry and state officials have been loud in their praise of its provisions. In the operation of the new law, burned-over or cut-over lands may be set up in reforestation districts at a low taxation rate while trees mature to cutting size. When timber is cut counties are to receive a share of the value of the lumber product.

The new Oregon law is one of the most progressive acts of its kind in the United States according to officials of the state forestry department, after careful study. Wherein it differs from any reforestation law now on the statute books of any state, is the automatic classification of all lands that come within the definition of "reforestation lands". This one feature is considered essential to the success of any reforestation law.

A program more comprehensive than ever attempted in Wisconsin is underway by the conservation commission, C. L. Harrington, superintendent of forests reports. White and Norway pine exclusively will be planted and it is expected between two and one-half and three million of these trees will be planted on state lands in Northern Forest Park, Vilas County, during the present season. Approximately 1,000 trees are planted on each acre, at an average spacing of six by six feet, which will mean that between 2,500 and 3,000 acres will be planted.

Tree planting is on again on a large scale in Massachusetts. A program of reforestation work indicates that about 4,000 acres of land were covered with young pine seedlings during the season. This called for about 4,000,000 plants, and they were supplied by the forestry division of the State Department of Conservation, which has raised them in the state nurseries.

About 1,250,000 trees have been allotted to state forests.

Approximately 2,000,000 forest tree seedlings were packed and shipped at the rate of about 100,000 a day from the State Forest Nursery, at Washington Crossing, to water companies, land owners and others engaged in reforestation and planting idle land in New Jersey, according to a statement by the Division of Forests.

More than ten million trees have been planted in Louisiana during the planting season, according to a statement issued by the Louisiana Division of Forestry. The total of hand-planted forests and woodlots now stands at approximately 28,000 acres. This acreage represents the planting of about 25 million trees. Most of the planting has been done by lumber and paper companies on their cut-over lands. The outstanding example of this type of planting is furnished by the Great Southern Lumber Company at Bogalusa, where plantings this year were in excess of six million trees all of which were grown in its own nurseries.

Educational work is underway all the time. Through the Iowa Forestry Extension Service, reports I. T. Bode, there were established 244 tree-planting demonstrations in 71 different counties. Advice was given, problems discussed, and information given through meetings, schools, and so on to over 9,000 different persons.

Nearly 4,000 boys and girls received instruction in tree identification, tree planting, care of forests, use of fire in the out-of-doors and good out-door manners. Of the boys and girls taking work during the 4-H club summer camps, 93 per cent report having carried on some type of forestry work during the year following, and nearly 30 per cent report actually conducting tree planting of their own. There were 602 farms in Iowa reported by county agricultural agents as having adopted approved practices in forestry. More than 81,000 trees were planted in the tree-planting demonstrations.

Distribution of the Forestry Primer by the American Tree Association has now reached three million copies. The educators of the land are enthusiastic in their praise of this booklet and its educational value with the citizens of tomorrow. The editors of the land are alive to the call to put idle land to work growing forests. The vision of a forest-planting nation, a nation forestry-minded surely is coming true.

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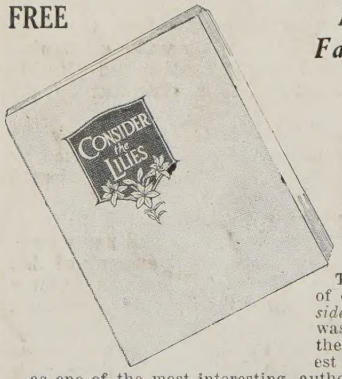

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